

حمل الآن

مجاناً وحصرياً

المراجعة رقم (1)

اختبار شهر مارس



1 [A] Choose the correct answer:

1 Mark

Sulphur is similar to iron in that they both

- (a) are electrical conductors. (b) are solids.
(c) are malleable. (d) have the same electron distribution.

[B] (1) State three reasons for the recycling of the aluminum soft drink cans.

1 Mark

*
.....

(2) State two uses for the bronze alloy.

1 Mark

*
.....

(3) Compare between : Oxygen nonmetal and zinc metal

"In terms of: The physical state – Electrical conductivity".

1 Mark

*
.....

2 [A] Write the scientific term :

1 Mark

Mixtures that most of them are not expressed in molecular formulas,
and are composed of the melts of two or more metals. (.....)

[B] Give reasons for the following:

2 Marks

(1) Phosphorus cannot be used in dry batteries.

*
.....

(2) Calcium $_{20}\text{Ca}$ is harder than sodium $_{11}\text{Na}$

*
.....

3 [A] Complete the following sentence:

1 Mark

Bronze alloy is formed by adding in a percentage of 5%
and 95% of

[B] What happens when :

2 Marks

- (1) The number of electrons in the last energy level is low

"In terms of: The strength of the metallic bond – The melting point".

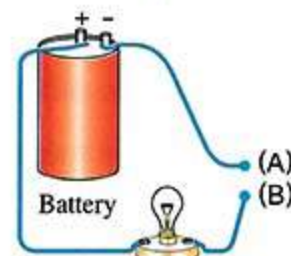
*

- (2) The two ends (A) and (B)

in this shown circuit are connected by carbon.

*

*



Test UNIT 1

Lesson Two

Acids and Alkalies

10 Marks

- 1 [A] Write the scientific term for the following:

1 Mark

An atomic group composed of 4 atoms of oxygen combining with 1 atom of phosphorus. (.....

[B] Give reasons for the following:

3 Marks

- (1) The electrical conductivity of sodium hydroxide is better than that of ammonium hydroxide.

*
.....
.....

- (2) Acidic oxides have detrimental (harmful) impacts on human and the environment.

*
.....
.....

- (3) Most of metal oxides are known as basic oxides.

*
.....

- 2 [A] Choose the correct answer:

1 Mark

What is the acid whose accumulation in the muscles causes muscle cramps?

(a) Hydrochloric acid.

(b) Lactic acid.

(c) Acetic acid.

(d) Chlorous acid.

[B] Sulphuric acid reacts with magnesium hydroxide forming magnesium sulphate :

2 Marks

(1) Write the molecular formula of magnesium sulphate.

*

(2) Compare between : Sulphuric acid and magnesium hydroxide
"In terms of: The effect on the two litmus strips".

*

.....

3 [A] Complete :

1 Mark

..... burns forming MgO which dissolves in water forming

[B] (1) What is the result of : Heating sulphur and then adding the produced substance to water and testing the solution with a blue litmus strip?

1 Mark

*

.....

(2) Write the molecular formula of hydrochloric acid,
Mention its importance in the human body.

1 Mark

*

.....

Test UNIT 1

Lesson Three Chemical Indicators and Salts

10 Marks

1 [A] Choose the correct answer:

1 Mark

Which of the following solutions has the highest pH?

(a) NaCl

(b) $\text{Mg}(\text{OH})_2$

(c) HNO_3

(d) H_2SO_3

[B] (1) Compare between nickel chloride and silver chloride
(In terms of: The solubility in water).

1 Mark

*

(2) Hydrangea plant in a certain soil develops red flowers :

2 Marks

1- What is the type of this soil?

*

2- Is this soil treated by calcium hydroxide ? Explain.

*

2 [A] Mark (✓) or (X), with correction if needed:

1 Mark

The colour of a damp litmus strip changes from red to blue when it is exposed to ammonia gas.

()

[B] (1) Two compounds (A) and (B) have pH values 8.5 and 3 respectively,

1 Mark

Determine the type of each of them.

*
.....

What happens when they are mixed together ?

*
.....
.....

(2) Mention one difference between

1 Mark

ammonium chloride **and** sodium carbonate.

*
.....

3 [A] Complete: The molecular formula of copper sulphate is,
its colour is

1 Mark

[B] (1) What is the result of: Placing both red and blue litmus strips in
a beaker containing magnesium hydroxide solution?

1 Mark

*
.....
.....

(2) Give reason : Not all the solutions of the salts are neutral.

1 Mark

*
.....
.....

Question 1 6 Marks

[A] Choose the correct answer:

2 Marks

(1) The following substances are bad electrical conductors, **except**

- (a) chlorine gas. (b) sodium chloride salt.
(c) hydrogen gas. (d) nitric acid.

(2) can react with an acid giving a salt and water.

- (a) SO_2 (b) CO_2 (c) NO_2 (d) K_2O

[B] (1) Compare between:

2 Marks

1- Sodium and aluminum "In terms of : Metallic bond strength – Melting point".

*

2- Sulphuric acid and sulphurous acid "In terms of : Electrical conductivity – Litmus strip colour in it".

*

(2) Give reasons for the following:

2 Marks

1- The lion statues of Qasr El-Nile bridge are rust-resistant.

*

2- The difference of the name of HCl according to its physical state.

*

Question 2 6 Marks

[A] Write the scientific term of each of the following:

2 Marks

(1) The rains in which sulphur oxides and nitrogen oxides are dissolved.

(.....)

(2) Chemical substances their colours change according to the type of their medium.

(.....)

[B] (1) Hydrochloric acid reacts with sodium hydroxide solution forming sodium chloride and water:

3 Marks

1- Write the molecular formula of sodium hydroxide. (.....)

2- Compare between water and hydrochloric acid "In terms of: pH".

*
.....

3- What is the type of sodium chloride compound? Is it ionic or covalent?

* /

(2) The diagram here shows a dry battery :

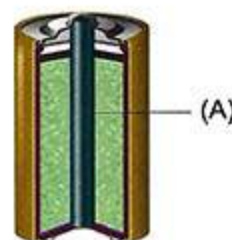
1 Mark

What is the element used in making the part (A)?

*

What are its important characteristics?

*



Question 3 6 Marks

[A] Complete the following:

2 Marks

(1) Metal oxides are known as, while nonmetal oxides are known as

(2) Bronze alloy is composed of 5% and 95%

[B] (1) State the importance of:

2 Marks

1- The metallic bond.

*
.....

2- Calcium hydroxide to the soil.

*
.....

(2) How can you differentiate between :

1 Mark

Nickel chloride salt and copper sulphate salt (One method).

*
.....

(3) How can the danger of concentrated sulphuric acid be indicated?

1 Mark

*
.....

Question 4 6 Marks

[A] Mark (✓) or (X), with correction:

2 Marks

- (1) The impact of the acid rains increases in the industrial cities. ()
- (2) When hydrangea plant grows in acidic soil, it develops blue flowers. ()

[B] (1) What are the results of:

2 Marks

1- Exposing a blue litmus strip wet with water to a test tube containing Cl_2 gas.

*

2- The high salinity of the water of the Dead Sea.

*

(2) The melting points of the elements (X) and (Y) are respectively 115.2°C , 660°C

2 Marks

Answer the following :

1- What is the type of each of them?

*

2- Which of them is a good electrical conductor?

*

Exam Model 2



ON UNIT 1

24 Marks

Question 1 6 Marks

[A] Choose the correct answer:

2 Marks

- (1) The red litmus strip wet with water turns blue by the exposure to
(a) CO_2 gas. (b) O_2 gas. (c) NH_3 gas. (d) H_2 gas.
- (2) Nitrite atomic group is found in the composition of
(a) nitrous acid. (b) nitric acid.
(c) pernitrous acid. (d) hyponitric acid.

[B] Give reasons for the following:

4 Marks

- (1) The difference of the number of hydrogen atoms in the molecules of the different acids.

*

(2) It is not possible to drown in the Dead Sea.

*
.....

(3) Milk of magnesia is used as a temporary treatment for the gastric hyperacidity.

*
.....

(4) Magnesium $_{12}\text{Mg}$ is harder with higher melting point than sodium $_{11}\text{Na}$

*
.....

Question 2 6 Marks

[A] Identify the odd item in each list, then state the connection between the others :

.....
2 Marks

(1) Graphite / Phosphorus / Zinc / Sulphur.

* /

(2) Copper sulphate / Calcium sulphate / Silver chloride / Lead carbonate.

* /

[B] (1) What happens when :

.....
2 Marks

1- Fossil fuel as coal or petroleum oil is burnt.

*
.....

2- Red litmus strip wet with water is exposed to nitrogen gas.

*
.....

(2) What is meant by:

.....
2 Marks

1- Atomic group.

*
.....
.....

2- Alloys.

*
.....
.....

Question 3 6 Marks

[A] Complete the following:

.....
2 Marks

(1) Sulphur trioxide is oxide, while calcium oxide is oxide.

(2) Lactic acid provides the muscles with upon the lack of oxygen, while its accumulation in the muscles causes

[B] (1) Compare between:

2 Marks

1- Sodium chloride solution and sodium carbonate solution

"In terms of: The effect on the two litmus strips".

*

2- H_2SO_4 and $Mg(OH)_2$ "In terms of: The chemical name".

*

(2) State the importance of:

2 Marks

1- Bronze alloy.

*

2- Hydrochloric acid to human body.

*

Question 4 6 Marks

[A] Mention one example for each of the following:

2 Marks

(1) White salt.

*

(2) Salt solution with pH higher than 7

*

[B] (1) Two polyatomic ions, composed of the same number of elements and atoms, and carry the same type and number of charges.

1 Mark

Write the name and the formula of each of them.

*

(2) What are the harmful impacts of the acid rains? (Only two of them).

1 Mark

*

(3) Two acids, nitric acid and nitrous acid :

2 Marks

1- Write the molecular formula of each of them.

*

2- How can you differentiate between them?

*

1 [A] Choose the correct answer :

The diagram illustrates the movement of an object from point (A) to point (C) passing through point (B). Which of the following is correct ?



1 Mark

- (a) Displacement < Distance. (b) Displacement > Distance.
(c) Displacement = Distance. (d) Displacement = $\frac{1}{2}$ Distance.

[B] Give reasons for the following :

(1) The weight of an object is always greater than its mass.

*

(2) The person who moves a table horizontally in the direction of his movement does work.

*

(3) The speed of a moving object increases with decreasing the time required to cover the same distance.

*

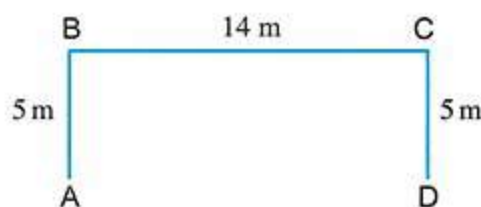
3 Marks

2 [A] Complete :

The vertical distance moved by an object above the ground level with increasing its energy.

1 Mark

[B] The diagram shows the path taken by an object from point (A) to point (D), passing through the two points (B) and (C) in a time equals 8 s



2 Marks

Calculate :

(1) The displacement.

*

(2) The speed of the object.

*

3 [A] Identify the odd word, then state the connection between the others :

Newton / Displacement / Joule / Meter.

1 Mark

* /

[B] If a work equals 500 J is done to lift 10 kg object above the ground to a certain height.

[Earth's gravitational field intensity = 10 N/kg]

2 Marks

Calculate :

(1) The potential energy.

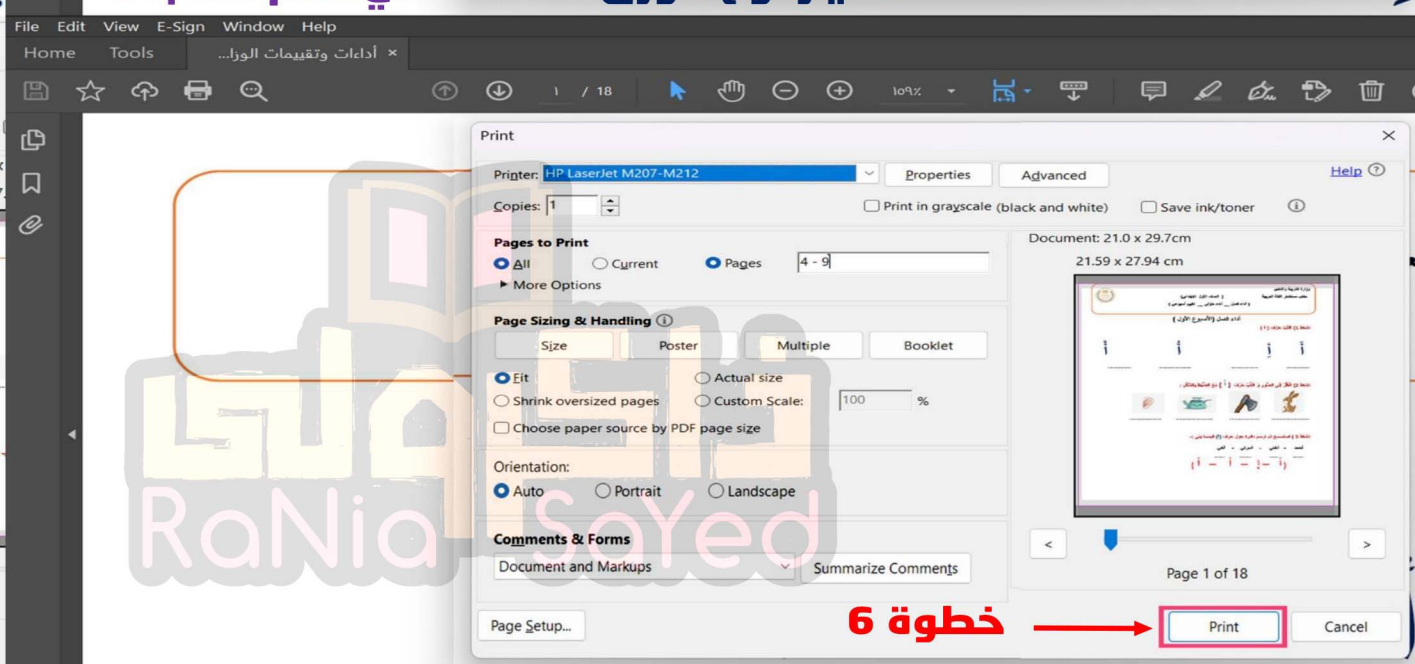
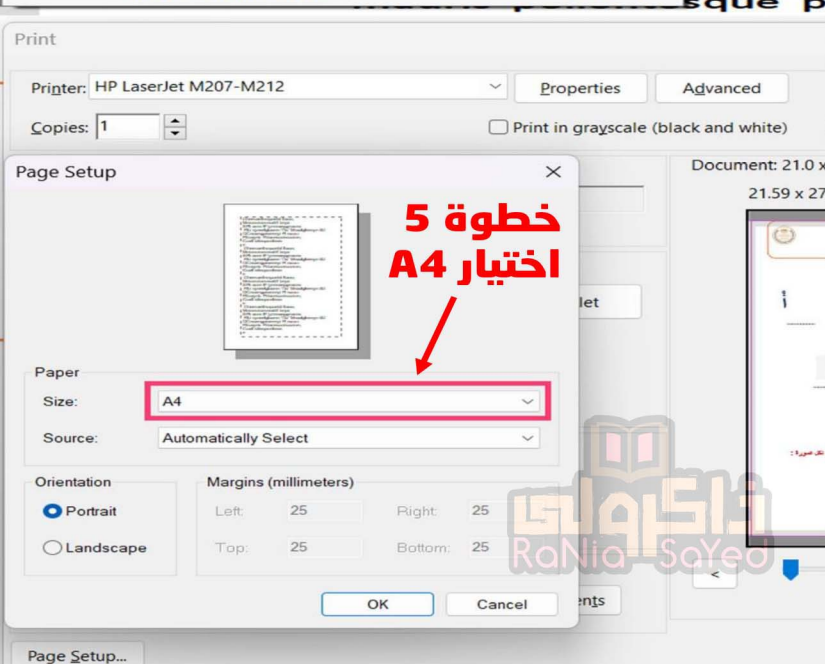
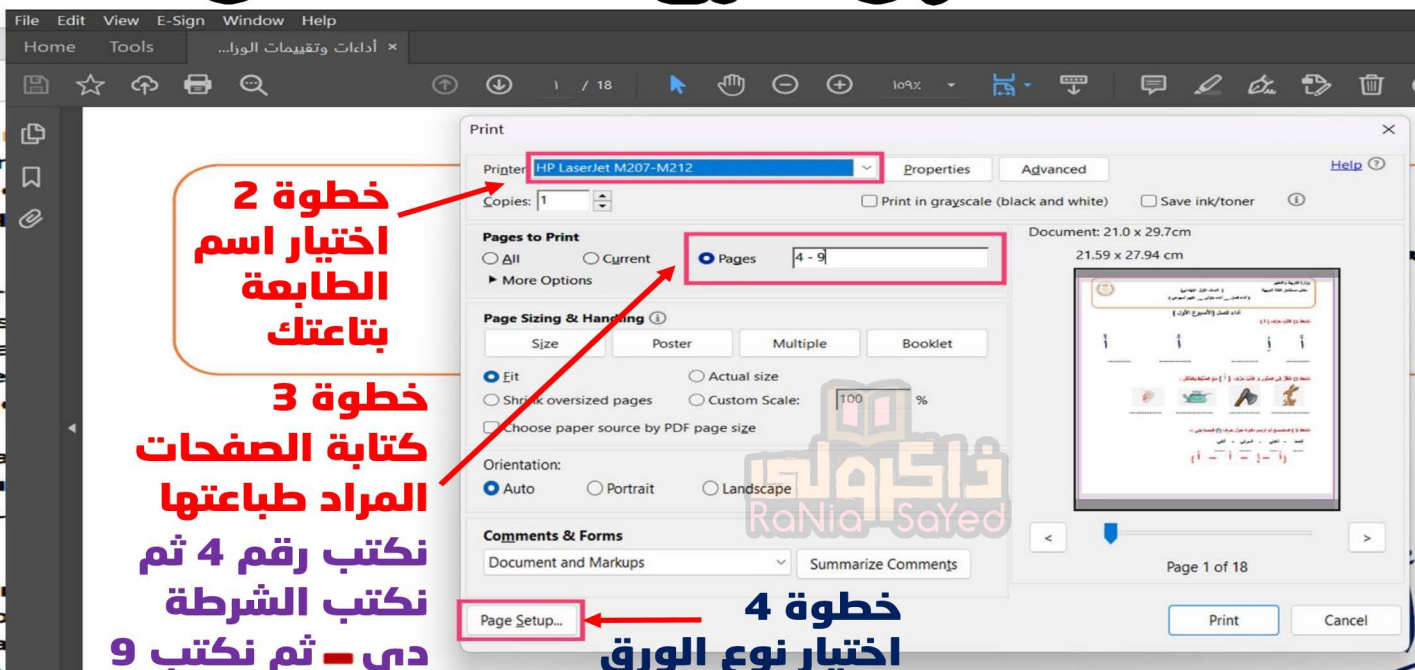
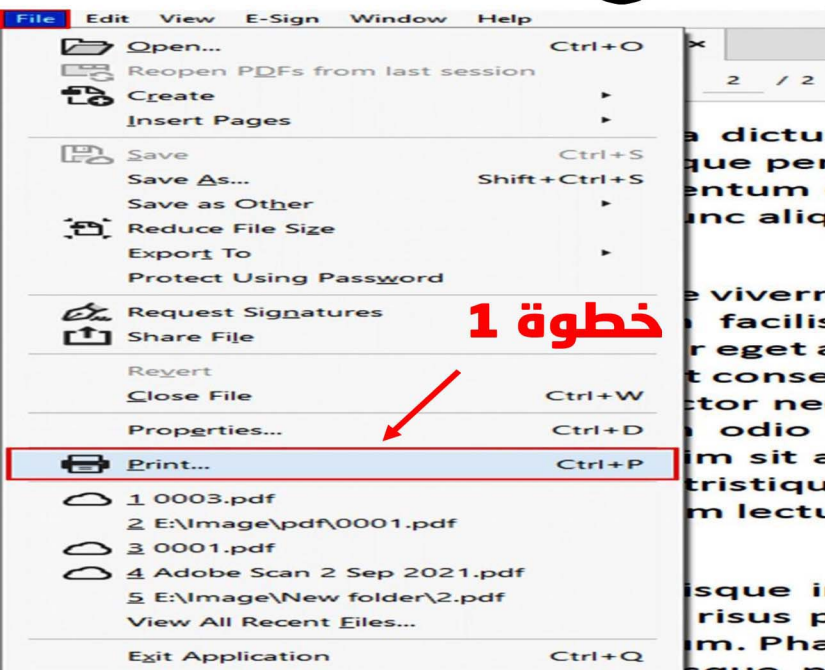
*

(2) The height.

*

كيفية طباعة صفحات معينة من ملف معين

مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9



حمل الآن

مجاناً وحصرياً

المراجعة رقم (2)

اختبار شهر مارس



1- A) Complete the following sentences:

- 1 The only metal that exists in a liquid state at room temperature is
- 2 Acids react with alkalis forming and

B) What happens ...?

- 1 To the strength of the metallic bond when the number of valence electrons of a metallic element decrease.
.....
- 2 When dissolving magnesium hydroxide Mg(OH)_2 in water.
.....
- 3 To an object when the force exerted acts in the same direction as the object's motion.
.....

2- A) Give a reason for:

- 1 Milk of magnesia is used as a temporary treatment for gastric hyperacidity.
.....
- 2 The litmus strips are not used to differentiate between a strong acid and a weak acid.
.....

B) Put (✓) or (✗):

- 1 The name of H_2SO_3 acid is hydrochloric acid. ()
- 2 The metallic bond arises between positive metal ions and negative nonmetal ions. ()
- 3 Potential energy increases with decreasing the height of object ()

3- A) Compare between:

- 1 Metals and nonmetals in terms of malleability and luster.
.....
- 2 Sodium hydroxide solution and ammonium hydroxide solution in terms of strength and electrical conductivity.
.....

B) Answer the following questions:

- 1 The speed of an object is 150 m/s.
.....
- 2 Write the molecular formula of the following compounds:
 - a) Chlorous acid. (.....)
 - b) Salt composed from the cations and anions NH_4^+ , PO_4^{3-} . (.....)

3- A) Correct the following statements:

- 1 The sulphite ion is similar to bicarbonate ion in the number of negative charges.
.....
- 2 The independent variable can be tested, which changes in response to changing the dependent variable.
.....

B) Answer the following questions:

- 1 Look at the opposite figure, then answer:

a) **What** is the name of the opposite device?

b) **Mention** the type of solution in the beaker and what happens when a litmus strip is dipped in it?



- 2 An apple of mass 200 g is on a tree branch at a height of 5 m above the ground. Calculate the potential energy of the apple. (Given that the gravitational field intensity = 10 N/kg)

1- A) Correct the underlined words:

- 1 The sulphate group and carbonate group have the same number of oxygen atoms.
(.....)
- 2 An element that contains 5 electrons in its outermost energy level is considered a metal. (.....)

B) Answer the following questions:

- 1 Compare between: basic oxides and acidic oxides (in terms of definitions and examples):

Points of comparison	Acidic oxides	Basic oxides
Definition		
Example		

- 2 How can you differentiate between oxygen gas (O_2) and ammonia gas (NH_3)
.....
.....
- 3 A person climbed a pole that is 30 m high above the ground surface, then descended again a distance of 21 m. Calculate the work done if the force is 20 N.
.....
.....

2- A) What happens when ...?

- 1 Copper sulphate salt is placed in water.
.....
- 2 The weight of an object doubles, and its height decreases to the half. (Regarding its potential energy)
.....

B) Write the molecular formula of...:

- 1 Potassium nitrate. (.....)
- 2 Salt composed from the cations and anions Al^{3+} , SO_4^{2-} . (.....)
- 3 Hydrobromic acid. (.....)

3- A) Give an example of:

- 1 An acid secreted by the stomach. (.....)
- 2 A gas removes the colour of the two litmus strips. (.....)

B) Give a reason for:

- 1 Distilled water does not change the colour of litmus strip.
..... •
- 2 It is not possible to drown in the dead sea.
..... •
- 3 The weight of an object is always greater than its mass.
..... •

1- A) Choose the correct answer:

- 1 Sodium oxide (Na_2O) reacts with all of the following except
 a) HCl b) KOH c) H_2SO_4 d) HNO_3
- 2 The potential energy of an object is 240 J at a height is 12 m. The weight of the object equals N.
 a) 10 b) 12 c) 20 d) 24

B) What happens when ...?

- 1 Magnesium burns in the presence of oxygen followed by the dissolution of the product in water.

- 2 Concentrated sulphuric acid is added to table sugar.

- 3 When the moving object returns to its starting point. (Regarding the displacement)

2- A) Give a reason for:

- 1 Graphite is used in dry cells.

- 2 The colour of the flowers of Hydrangea plant differs according to the type of the soil.

B) Correct the underlined words:

- 1 Litmus strips measure the value of any solution directly and accurately. (.....)
- 2 Atomic groups are mixtures, most of them are not expressed in molecular formulas. (.....)
- 3 Potential energy of a body depends on height and size. (.....)

3- A) Write the name of the following ...:

- 1 HF:
- 2 NO:

B) Answer the following questions:

- 1 **Compare between:** Nickel chloride and sodium carbonate in terms of ...:

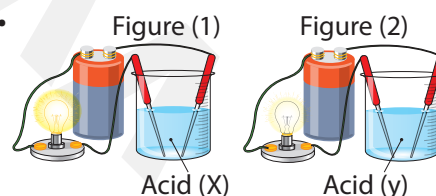
Points of comparison	Nickel chloride	Sodium carbonate
Molecular formula		
Their colour		

- 2 **Look at the opposite figure, then answer:**

The opposite figures represent that electrical conductivity of sulphuric acid and acetic acid.

Identify the acid in each figure, with an explanation.

.....
.....
.....



- 3 Calculate the time taken by a moving object traveling at a speed of 80 km/h to cover a distance of 240 km.

.....
.....

1- A) Complete the following sentences:

- 1 Acidic soil can be treated by adding, whose molecular formula is ..
..... .
- 2 The applied force does not do work when the direction of effect is
the direction of motion, or when the object

B) Give a reason for:

- 1 The pH meter device is more accurate than universal indicator strips in determining the pH value of a solution.
.....
.....
- 2 Some metals are recycled.
.....
.....
.....
- 3 Hydrochloric acid is not an oxyacid.
.....

2- A) Answer the following questions:

- 1 The energy stored in the body as a result of the work done (0.5 KJ).
.....
- 2 **Compare between ...:**

Magnesium hydroxide and sulphuric acid (in terms of the ions produced from the dissolution of each of them in water)

Point of comparison	Magnesium hydroxide	Sulphuric acid
The ions produced from the dissolution of each of them in water		

B) Write what each of the following sentences refer to:

- 1 Chemical substances whose color differ in acidic medium from that in alkaline medium. (.....)
- 2 An ion composed of more than one atom of more than one element. (.....)
- 3 Rain resulting from the dissolution of acidic oxides in atmospheric water vapour. (.....)

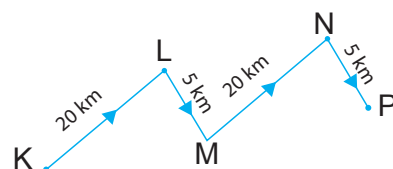
3- A) What happens ...?

- 1 To The speed of an object when the time required to cover a distance is doubled.
- 2 When Heating a piece of sulphur and adding the product to water, then placing (litmus paper) in the solution.

B) Answer the following questions:

- 1 **What is the meant by:** Work.
- 2 **Write the correct molecular formula and the name of the salt formed from the following anions:**
 SO_4^{2-} , NH_4^+
- 3 A bicycle travelled from point (K) to point (P) in half an hour.

Calculate the speed of a bicycle in m/s.



1- A) Complete the following sentences:

- 1 The only metal that exists in a liquid state at room temperature is **mercury**
- 2 Acids react with alkalis forming **salts** and **water**

B) What happens ...?

- 1 To the strength of the metallic bond when the number of valence electrons of a metallic element decrease.
 - **The strength of metallic bond decreases.**
- 2 When dissolving magnesium hydroxide $\text{Mg}(\text{OH})_2$ in water.
 - **Magnesium hydroxide slightly dissolves in water and dissociates into its ions Mg^{2+} and OH^- .**
- 3 To an object when the force exerted acts in the same direction as the object's motion.
 - **The work done on the object increases.**

2- A) Give a reason for:

- 1 Milk of magnesia is used as a temporary treatment for gastric hyperacidity.
 - **To neutralize gastric hyperacidity as it contains magnesium hydroxide.**
- 2 The litmus strips are not used to differentiate between a strong acid and a weak acid.
 - **Because any acid changes the color of the blue litmus strip into red.**

B) Put (✓) or (X):

- 1 The name of H_2SO_3 acid is hydrochloric acid. (X)
- 2 The metallic bond arises between positive metal ions and negative nonmetal ions. (X)
- 3 Potential energy increases with decreasing the height of object (X)

3- A) Compare between:

- 1 Metals and nonmetals in terms of malleability and luster.
 - Metals are malleable and have a metallic luster, while nonmetals are brittle and opaque.
- 2 Sodium hydroxide solution and ammonium hydroxide solution in terms of strength and electrical conductivity.
 - Sodium hydroxide solution is a strong alkali and good electrical conductor, while ammonium hydroxide solution is a weak alkali and bad electrical conductor.

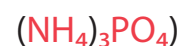
B) Answer the following questions:

- 1 The speed of an object is 150 m/s.
 - It means that the object travels a distance of 150 meters in one second.
- 2 Write the molecular formula of the following compounds:

a) Chlorous acid.



b) Salt composed from the cations and anions NH_4^+ , PO_4^{3-} .



1- A) Choose the correct answer:

- 1 A car travels a distance of 160 m in 8 minutes. Its speed equals
 - a) 40 m/min
 - b) 20 m/h
 - c) 40 m/s
 - d) 20 m/min
- 2 Which pH value represents a weak acid?
 - a) 2
 - b) 5
 - c) 7
 - d) 12

B) Give a reason for:

- 1 Aluminum ($_{13}\text{Al}$) is harder and has a higher melting point than sodium ($_{11}\text{Na}$).
 - Because the number of valence electrons in aluminum atom (3 electrons) is higher than that in sodium atom (1 electron), and as the number of valence electrons increases, the hardness and melting point of the metal increase.
- 2 The occurrence of muscle cramps when oxygen decreases in the human body.
 - Due to accumulation of lactic acid in the muscles of the human body.
- 3 The bronze alloy is used in jewellery and medals.
 - Because it is harder than copper and it does not rust.

2- A) What happens when ...?

- 1 Nitrogen and Sulphur dioxides dissolve in atmospheric water vapor.
 - This causes the formation of acid rains.
- 2 A piece of carbon is hammered.
 - The piece of carbon crumbles.

B) Cross out the odd item:

- 1 $(\text{NH}_4)_2\text{CO}_3$ - CaCO_3 - NaNO_3 - AgCl . (NaNO_3)
- 2 NaOH - H_2SO_4 - KOH - $\text{Ca}(\text{OH})_2$. (H_2SO_4)
- 3 speed - height - weight - potential energy. (speed)

3- A) Correct the following statements:

- 1 The sulphite ion is similar to bicarbonate ion in the number of negative charges.
 - The sulphite ion is different with carbonate ion in the number of negative charges.
- 2 The independent variable can be tested, which changes in response to changing the dependent variable.
 - The dependent variable can be tested, which changes in response to changing the independent variable.

B) Answer the following questions:

- 1 Look at the opposite figure, then answer:

a) **What** is the name of the opposite device?

- pH meter.

b) **Mention** the type of solution in the beaker and what happens when a litmus strip is dipped in it?

- It is an alkaline solution. The red litmus strip turns blue.

- 2 An apple of mass 200 g is on a tree branch at a height of 5 m above the ground. Calculate the potential energy of the apple. (Given that the gravitational field intensity = 10 N/kg)

- Mass (m) = 200 g = $\frac{200}{1000} = 0.2$ kg

$$PE = m \times g \times h = 0.2 \times 10 \times 5 = 10 \text{ J}$$



1- A) Correct the underlined words:

- The sulphate group and carbonate group have the same number of oxygen atoms.
(type and number of charge (-2))
- An element that contains 5 electrons in its outermost energy level is considered a metal.
(less than 4)

B) Answer the following questions:

- Compare between: basic oxides and acidic oxides (in terms of definitions and examples):

Points of comparison	Acidic oxides	Basic oxides
Definition	They are nonmetal oxides that dissolve in water, forming acids.	They are metal oxides that dissolve in water, forming alkalis.
Example	Sulphur dioxide SO_2 – Nitrogen dioxide NO_2	Magnesium oxide MgO – Sodium oxide Na_2O

- How can you differentiate between oxygen gas (O_2) and ammonia gas (NH_3)
 - By using indicator strips wetted with water.
 - Oxygen gas (O_2) doesn't change the colour of the indicator, while ammonia gas (NH_3) changes the colour of red litmus strip to blue.
- A person climbed a pole that is 30 m high above the ground surface, then descended again a distance of 21 m. Calculate the work done if the force is 20 N.
 - The displacement (d) = $30 - 21 = 9 \text{ m}$
 $W = F \times s = 20 \times 9 = 180 \text{ J}$

2- A) What happens when ...?

- Copper sulphate salt is placed in water.
 - It dissolves in water and forms a copper sulphate solution.
- The weight of an object doubles, and its height decreases to the half. (Regarding its potential energy)
 - The potential energy of the object remains constant.

B) Write the molecular formula of...:

- 1 Potassium nitrate. (KNO_3)
- 2 Salt composed from the cations and anions Al^{3+} , SO_4^{2-} . ($\text{Al}_2(\text{SO}_4)_3$)
- 3 Hydrobromic acid. (HBr)

3- A) Give an example of:

- 1 An acid secreted by the stomach. (Hydrochloric acid (HCl))
- 2 A gas removes the colour of the two litmus strips. (Chlorine gas)

B) Give a reason for:

- 1 Distilled water does not change the colour of litmus strip.
 - Because water is neutral, as number of H^+ ions in it equals number of OH^- ions.
- 2 It is not possible to drown in the dead sea.
 - Due to the high percentage of salts found in water leads to increasing the density of this water.
- 3 The weight of an object is always greater than its mass.
 - Because weight is the product of multiplying the object's mass by the gravitational field intensity.

1- A) Choose the correct answer:

- 1 Sodium oxide (Na_2O) reacts with all of the following except
- a) HCl b) **KOH** c) H_2SO_4 d) HNO_3
- 2 The potential energy of an object is 240 J at a height is 12 m. The weight of the object equals N.
- a) 10 b) 12 c) **20** d) 24

B) What happens when ...?

- 1 Magnesium burns in the presence of oxygen followed by the dissolution of the product in water.
- Magnesium oxide MgO is formed when it dissolves in water, it produces magnesium hydroxide solution $\text{Mg}(\text{OH})_2$.
- 2 Concentrated sulphuric acid is added to table sugar.
- The sugar becomes charred (burnt).
- 3 When the moving object returns to its starting point. (Regarding the displacement)
- The displacement of a moving object equals zero.

2- A) Give a reason for:

- 1 Graphite is used in dry cells.
- Because it is the only nonmetal that is a good conductor of electricity.
- 2 The colour of the flowers of Hydrangea plant differs according to the type of the soil.
- Because the flowers turn blue when they are planted in acidic soil, while they turn red when planted in basic soil.

B) Correct the underlined words:

- 1 Litmus strips measure the value of any solution directly and accurately. (pH meter)
- 2 Atomic groups are mixtures, most of them are not expressed in molecular formulas. (Alloys)
- 3 Potential energy of a body depends on height and size. (weight)

3- A) Write the name of the following ...:

- 1 HF: Hydrofluoric acid
- 2 NO: Nitric Oxide

B) Answer the following questions:

- 1 **Compare between:** Nickel chloride and sodium carbonate in terms of ...:

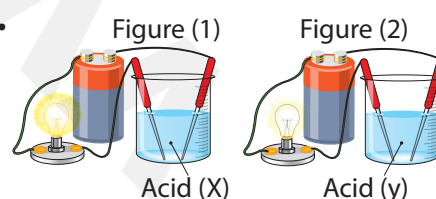
Points of comparison	Nickel chloride	Sodium carbonate
Molecular formula	NiCl_2	Na_2CO_3
Their colour	Green salt	White salt

- 2 **Look at the opposite figure, then answer:**

The opposite figures represent that electrical conductivity of sulphuric acid and acetic acid.

Identify the acid in each figure, with an explanation.

- Acid (X) acid in figure (1) is sulphuric acid because it is a strong acid and a good conductor of electricity.
- Acid (Y) acid in figure (2) is acetic acid because it is a weak acid and weak conductor of electricity.



- 3 Calculate the time taken by a moving object traveling at a speed of 80 km/h to cover a distance of 240 km.

- Speed (v) = 80 km/h
Distance (d) = 240 km

- Time (t) = $\frac{\text{Distance (d)}}{\text{Speed (v)}}$

$$t = \frac{240}{80} = 3 \text{ hours}$$

1- A) Complete the following sentences:

- 1 Acidic soil can be treated by adding **calcium hydroxide**, whose molecular formula is $\text{Ca}(\text{OH})_2$.
- 2 The applied force does not do work when the direction of effect is **perpendicular** to the direction of motion, or when the object **remains at rest**.

B) Give a reason for:

- 1 The pH meter device is more accurate than universal indicator strips in determining the pH value of a solution.
 - Because a pH meter device determines the pH value accurately, and displays the indicted number immediately on its digital screen, while universal indicator strips provide only an approximate pH value.
- 2 Some metals are recycled.
 - Metals are recycled for the following reasons:
 1. Their percentages in the Earth's crust decrease.
 2. The difficulty of extracting them form their ores.
 3. Recycling costs less than extracting them from their ores.
- 3 Hydrochloric acid is not an oxyacid.
 - Because it does not contain oxygen atoms.

2- A) Answer the following questions:

- 1 The energy stored in the body as a result of the work done (0.5 KJ).
 - It means that the potential energy of body is 0.5 KJ.

2 Compare between ...:

Magnesium hydroxide and sulphuric acid (in terms of the ions produced from the dissolution of each of them in water)

Point of comparison	Magnesium hydroxide	Sulphuric acid
The ions produced from the dissolution of each of them in water	Mg^{2+} cation and OH^- anions are formed	H^+ cations and SO_4^{2-} anion are formed

B) Write what each of the following sentences refer to:

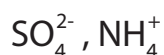
- 1 Chemical substances whose color differ in acidic medium from that in alkaline medium. (Indicator)
- 2 An ion composed of more than one atom of more than one element. (Atomic group)
- 3 Rain resulting from the dissolution of acidic oxides in atmospheric water vapour. (Acid rains)

3- A) What happens ...?

- 1 To The speed of an object when the time required to cover a distance is doubled.
 - The speed decreases to half.
- 2 When Heating a piece of sulphur and adding the product to water, then placing (litmus paper) in the solution.
 - Burning sulphur forms sulphur trioxide, and sulphuric acid is formed when it is placed in water, which turns a blue litmus strip to red.

B) Answer the following questions:

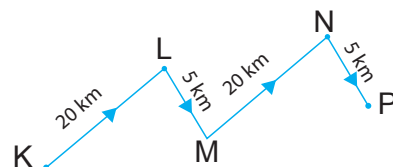
- 1 What is the meant by: Work.
 - The amount of energy required to move an object through a certain displacement in the same direction of the force which acts on it.
- 2 Write the correct molecular formula and the name of the salt formed from the following anions:



- The salt formed is ammonium sulphate, and its molecular formula is $(\text{NH}_4)_2\text{SO}_4$
- 3 A bicycle travelled from point (K) to point (P) in half an hour.

Calculate the speed of a bicycle in m/s.

- Total distance = $20 + 5 + 20 + 5 = 50 \text{ km}$
Distance in meters = $50 \times 1000 = 50000 \text{ m}$
Time in seconds = half an hour = $30 \text{ min} = 30 \times 60 = 1800 \text{ s}$
Speed of the bicycle (v) = $\frac{d}{t} = \frac{50000}{1800} = 27.8 \text{ m/s}$



حمل الآن

مجاناً وحصرياً

المراجعة رقم (3)

اختبار شهر مارس



1

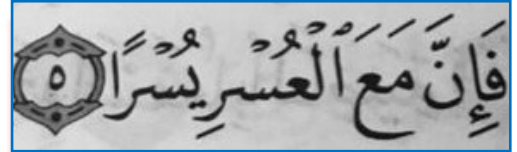
Write down what the following sentences mean

Unit 1

- 1- Elements that have metallic luster and are good conductors of heat and electricity.
- 2- A liquid metallic element that has good electrical conductivity.
- 3- Brittle elements in which the last energy level contains more than 4 electrons.
- 4- A nonmetal that is a good conductor of electricity and used in the dry cells.
- 5- The atoms of the solid metal are gathered in a certain arrangement.
- 6- The attraction force between positive metal ions and the negative valence electron cloud which surrounds them.
- 7- A mixture composed of the melts of two metals or more.
- 8- The process of the conversion of the wastes into new usable substances.
- 9- An ion composed of more than one atom of more than one element.
- 10- A scientist who clarified that alkalis are substances that dissolve in water and give (produce) hydroxide ions.
- 11- Acids produced from the combination of hydrogen with one of the negatively charged atomic groups, excluding hydroxide group.
- 12- An acid secreted by the stomach that participates in food digestion.
- 13- An acid accumulated in the muscles of the body during their lack of oxygen, causing muscle cramps.
- 14- A substance whose dissolution in water leads to an increase in the percentage of H^+ cations in the solution.
- 15- A substance whose dissolution in water leads to an increase in the percentage of OH^- anions in the solution.
- 16- The cation which is responsible for the properties of the acids.
- 17- The anion which is responsible for the properties of the alkalis.
- 18- Acids that are good electrical conductors.

- 19- Metal oxides, some of which dissolve in water forming alkalis.
- 20- Nonmetal oxides that dissolve in water forming acids.
- 21- Rains which result from the dissolution of acidic oxides in the atmospheric water vapour.
- 22- Chemical substances whose colour differs in acidic medium from that in alkaline medium.
- 23- An indicator that can differentiate between the different acids or the different alkalis according to their strength.
- 24- A plant whose flowers colour differs depending on the acidity or the basicity of the soil.
- 25- A Danish scientist who developed pH scale to differentiate between acidic, basic and neutral solutions.
- 26- A scale that ranges between the values 0 to 14, and is used to determine the acidity and the basicity of solutions.....
- 27- A device used to measure the pH value of solutions directly and accurately.
- 28- Compounds, mostly ionic, formed from the combination of an alkali cation with an acid anion.
- 29- The set of points through which the object passes during its motion.
- 30- The total length of any path taken by the object during its moving from the starting point to the end point.
- 31- The shortest straight path connecting between the starting point and the end point in a constant direction.
- 32- The distance covered per unit time.
- 33- The amount of energy required to move an object through a certain displacement in the same direction of the force acting on it.
- 34- The quotient of the work done divided over the displacement, which is estimated in newtons.
- 35- One of the skills in scientific research and designing scientific comparative experiments.

- 36- The variable which is changed during the experiments.
- 37- The variable to be tested which is being changed in response to changing the independent variable.
- 38- The variables that are controlled to remain constant throughout the experiment.
- 39- ability to do work.
- 40- The energy stored in the object as a result of the work done on it.
- 41- The product of multiplying the mass of the object by the Earth's gravitational field intensity.



2

Complete the following sentences

Unit 1

- 1- The outer energy level of metals contains less than electrons, while non-metals contain more than electrons.
- 2- Element (A) has two electrons in its outer energy level (M), so its type is and Element (B) has six electrons in its outer energy level (L) has six electrons its type
- 3- All metals are solid substances except is a liquid
- 4- All non-metals are poor conductors of electricity except which is a good conductor of electricity.
- 5- Non-metals exists in three states, solid such as and gaseous, such as and the only liquid is
- 6- The atoms of solid metals are arranged in a pattern known as
- 7- The metallic bond is occurs as a result of the attraction force between positive metal and the surrounding negative cloud.
- 8- Bronze alloy is composed of 5% and 95% And characterized by being more than copper and its for rusting.
- 9- Oxygen acids are those that contain the element such as and
- 10- Hydrochloric acid and are acids that do not contain the element.

- 11- The number of hydrogen atoms in the acid molecule equals the charge of the component, while the number of hydroxide groups in the alkali molecule equals the charge of the component
- 12- Lactic acid supplies muscles with ,When oxygen is deficient and accumulates in the muscles, it causes
- 13- The scientist explained that acids are substances that dissolve in water and give positive ions, while alkalis give negative ion when dissolved in water.
- 14- The total charge of any compound molecule is equal to
- 15- The stomach secretes acid which helps in
- 16- Hydrochloric acid reacts with sodium hydroxide and form salt (NaCl) and (H₂O) or written (HOH).
- 17- The molecular formula of the alkali containing the cation Ca⁺²
- 18- Lemon and ketchup are considered substances, while toothpaste and baking soda are substances.
- 19- When hydrochloric acid dissolves in water, it produces and ions.
- 20- When magnesium hydroxide dissolves in water, the following ions are formed and
- 21- Acids react with alkalis to form and
- 22- Nitric acid is considered a acid, while nitrous acid and sulphurous acid are acids.
- 23- Metals burn in an oxygen atmosphere and form most of them are known as oxides
- 24- Non-metals burn in an oxygen atmosphere and form most of them are known as oxides
- 25- The dissolution of sulphur trioxide in water produces
- 26- Melting in water produces magnesium hydroxide
- 27- The combustion of fossil fuels produces oxides and
- 28- chemicals that change colour in an acidic medium compared to a

basic medium, such as

29- We reduce soil acidity by adding substances such as

30- The pH value of acids Less than 7, while in it is greater than 7.

31- The pH value of a solution of table salt (sodium chloride) is

32- The hydrogen number is accurately measured using

33- Acidic gases and

34- Basic gases and

35- Neutral gases on litmus paper are and

36- Produced by the reaction of acids with alkali and

37- Copper sulphate salt is in colour, while salt is white in colour.

38- Salt consists of calcium cation and sulphate anion

39- Ammonium chloride solution turns litmus paper , while solution blue litmus paper.



Unit 2

40- The measuring unit of distance and displacement

41- The measuring unit of speed and

42- Speed =

43- The measuring unit of work while the newton is the measuring unit of

44- force $\times$ displacement

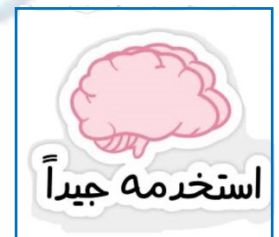
45- Factors affecting potential energy are and

46- The measuring unit of weight

47- Potential energy =

48- 5 km m, 3kJ = J

49- The set of points through which a body passes during its motion is known as



- 50- It is defined as the shortest straight line between the starting point and the end point.
- 51- The distance traveled during a unit of time is defined as while the ability to perform work is called
- 52- Energy is measured in units of and work is measured in units of
- 53- Mass is measured in units of and weight is measured in units of
- 54- The work done is directly proportional to and

3

Choose the odd word (or phrase) out, then mention the relation between the rest:

Unit 1

1. Gold / Silver / Bromine / Mercury
2. Phosphorus / Bromine / Mercury / Sulfur
3. Graphite / Bromine / Phosphorus / Sulfur
4. Iodine / Sulfur / Carbon / Hydrogen
5. Bronze / Chlorine / Copper / Tin

Life is Hard
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4

Give reason for (scientific explanation) for each of the following

Unit 1

- 1- Calcium ($_{20}\text{Ca}$) is metal while Chlorine ($_{17}\text{Cl}$) is non-metal.
.....
- 2- Carbon is used in the manufacture of dry columns even though it is not a metal.
.....
- 3- Calcium ($_{20}\text{Ca}$) is harder than sodium ($_{11}\text{Na}$).
.....
- 4- Bronze alloy is used in the manufacture of medals instead of copper.
.....
- 5- Acids turn blue litmus paper into red.
.....

6- Alkalis turn red litmus paper into blue.

.....

7- Magnesium milk is used to treat stomach acidity.

.....

8- Litmus paper is not suitable for distinguishing between strong and weak acids.

.....

9- Distilled water does not affect litmus paper.

.....

10- A pH meter is more accurate than universal strips in determining the pH value of a solution.

.....

11- Sodium chloride salt is an ionic compound

.....

12- It cannot sink in the Dead Sea.

.....

13- Graphite is used to make the positive electrode of a dry cell battery (battery stone)

.....

14- Aluminum ($_{13}\text{Al}$) is harder and has a higher melting point than sodium ($_{11}\text{Na}$).

.....

15- Metals are good conductors of electricity.

.....

16- Bronze is more resistant to rust than pure copper.

.....

17- Magnesium chloride molecule is composed of one magnesium cation and two chloride anions.

.....

18- Calcium is added to acidic soil.

.....

19- The color of hydrangea flowers changes depending on the type of soil.

.....

20- Chemical indicators only work in the presence of water.

.....

21- Some metallic elements are recycled.

.....

22- Occurrence of acid rain occurs.

.....

23- Hydrochloric acid is used in the digestion of food.

.....

24- Muscle tension occurs when there is a lack of oxygen in the muscles.

.....

25- Copper is used in the manufacture of electrical wires.

.....

26- Most alloys are not expressed in molecular form.

.....

Unit 2

27- The speed of the moving object decreases if it required longer time to cover the same distance.

.....

28- When the speed of an object increases, the covered distance at the same time increases.

.....

29- A person pushing against a wall does not perform work.

.....

30- A person pushing a shopping cart performs work.

.....

31- The role of fuel within a car is similar to the role of food within a living organism.

.....

5 what can be observed when (what happen if)

Unit 1

1- Hammering a piece of graphite

.....

2- Increasing the number of valence electrons in metal atoms relative to the metallic bond

.....

3- Mixing molten gold with molten copper.

.....

4- Passing an electric current through sulphuric acid and acetic acid in relation to lighting a lamp

.....

5- The reaction of acids with alkalis

.....

6- Heat a piece of magnesium and add the result to water, then place a red litmus paper in the solution.

.....

7- Melting sulphur oxides in rainwater

.....

8- Place a piece of sugar in a test tube containing concentrated sulphuric acid.

.....

9- Place a red and a blue sunflower paper in a tube containing hydrogen gas.

.....

10- Place a red and a blue sunflower paper in a tube containing chlorine gas.

.....

11- Add calcium hydroxide to acidic soil.

.....

12- You dip two litmus strip in a cup containing an acidic solution.

.....

13- You dip two litmus strip in a cup containing an alkaline solution.

.....

14- You dip two litmus strip in a cup containing distilled water.

.....

15- Accumulation of lactic acid in muscles.

.....

16- Combustion of metal with oxygen.

17- Combustion of non-metal with oxygen.

18- Melting of sulfur and nitrogen oxides in water vapor in the atmosphere.

19- Increasing in body weight relative to its potential energy.

20- Decreasing in distance traveled during the same time.

21- Strong impact on an object with zero displacement.

22- Vehicles exceed the permitted speed limits.

23- A moving object covers the same distance it travelled in half the time (Regarding its speed).

24- Exerting a suitable force on a stationary object (an object at rest).

25- The force which affects an object increases in the direction of its movement (Regarding the work done).

26- The weight of an object is doubled while its height above the ground remains constant (Regarding its potential energy).

27- The vertical distance to which the object is lifted above the ground decreases to half while its weight remains constant (Regarding its potential energy).

لو طريقك صعب
أعرف النهاية حلوة

6 Answer the following

Unit 1

1. What is the benefit of recycling metal waste?

.....

2. Two elements (A, B) their melting points is ($1538^{\circ}\text{C} - 115.21^{\circ}\text{C}$)

A- What type are they? Explain your answer.

.....

B - Which one is a good conductor of electricity?

.....

C - Which one can be hammered and drawn?

.....

Unit 2

3. Calculate the time taken by a car moving at a speed of 40 m/s to cover a distance of 200 m

.....

4. Calculate the height of an object of mass 6 kg above the ground when its potential energy is 180 J , knowing that the gravitational field intensity is 10 N/kg

.....

5. Calculate the speed of an object that covers distance of 50 km in 2 h .

.....

6. Calculate the time required to cover a distance of 300 m if the object moves at a speed of 20 m/s .

.....

7. A person pushes an object with a force of 40 N , causing it to move in a straight line for a distance of 10 m . Calculate the amount of work done.

.....

8. Calculate the potential energy of an object with a mass of 15 kg at a height of 150 cm , given that the acceleration due to gravity is 10 m/s^2 .

.....

9. An object moves at a speed of 20 km/h . Calculate the distance traveled after 3 h .

.....

10. An object exerted a work of (50 J) to move a wheel a distance of (10 m). Calculate the amount of force required to exert the work.

11. An object has a potential energy (240 J) at a height of (12 m). Calculate the weight of the object.

12. What factors determine potential energy?

13. What is the relationship between work and both force and displacement?

14. What mathematical relationship is used to calculate velocity?

15. What mathematical relationship is used to calculate work?

16. What mathematical relationship is used to calculate potential energy given weight?

17. What mathematical relationship is used to calculate potential energy given mass?

18. What are the conditions for doing work?

7 Write the chemical formula for the following compounds

1. Hydrochloric acid

Unit 1

2. Hydrobromic acid

3. Sulphuric acid

4. Phosphoric acid

5. Nitric acid

6. Potassium hydroxide

7. An atomic group consisting of three elements

8. Nitrous acid

9. Sodium chloride

10. Calcium hydroxide

11. Aluminum sulfate

12. Potassium nitrate

13. Sodium carbonate

14. Magnesium oxide

15. Calcium phosphate

16. Iron (III) chloride

17. Hydrogen sulfide

18. Ammonium hydroxide

19. Sulfuric acid

20. Sulfur dioxide

.....

21. Nitrogen monoxide

.....

22. Silver nitrate

.....

23. Sodium sulfide

.....

24. Aluminum oxide

.....

25. Sodium hydroxide

.....

8

What is the use(function) of each of the following

Unit 1

1. Stomach acid

.....

2. Litmus paper

.....

3. Graphite

.....

4. Bronze alloy

.....

5. Recycling of elements

.....

6. Lactic acid

.....

7. Magnesium milk

.....

8. Sulfur and nitrogen oxides

.....

9. Acidic oxides

.....

10. Basic oxides

.....

11. Adding tin to copper

.....

12. Adding calcium hydroxide to soil

.....

13. Universal guide

.....

14. pH meter

.....

15. Scientist Soren Sorensen

.....

16. Scientist Arrhenius

.....

9

Write the names of the following compounds and state their type

Unit 1

1. H_2CO_3

.....

2. H_2S

.....

3. H_3PO_4

.....

4. NaCl

.....

5. $\text{Ca}(\text{OH})_2$

.....

6. $\text{Al}_2(\text{SO}_4)_3$

.....

7. KNO_3

.....

8. Na_2CO_3

.....

9. MgO

.....

10. $\text{Ca}_3(\text{PO}_4)_2$

.....

11. H_2S

.....

12. NH_4OH

.....

13. H_2SO_4

.....

14. HNO_3

.....

15. HCl

.....

16. SO_2

.....

17. NO

.....

18. AgNO_3

.....

19. CuSO_4

.....

20. Na_2S

.....

21. NaHCO_3

.....

22. Al_2O_3

.....

23. MgSO_4

.....

10

Give one example for each of the following,
writing the molecular formula

Unit 1

1. Weak acid

.....

2. Strong acid

.....

3. Strong base

.....

4. Weak base

.....

5. Metal oxide

.....

6. Non-metal oxide

.....

7. Gas that turns blue litmus red

.....

8. Gas that turns red litmus blue

.....

9. Gas that has no effect on litmus

.....

10. Chemical indicator that accurately measures pH

.....

11. White salts

.....

12. Colored salt

.....

13. Salts that dissolve in water

.....

14. Salts poorly soluble in water

.....

15. Metals

.....

16. Non-metals

.....

17. Alloys

.....

18. Acids

.....

19. Bases

.....

20. Oxides

.....

21. Salts

.....

22. Monovalent atomic group

.....

23. Divalent atomic group

.....

24. Trivalent atomic group

.....

25. Oxyacid

.....

26. Non-oxygenic acid

.....

27. Acid in your body

.....

28. Alkaline

.....

29. Metallic oxide

.....

30. Non-metallic oxide

.....

31. Alkaline substance used as medicine

.....

32. Body that performs work

.....

33. Body that does not perform work

.....

11 Choose the correct answer

Unit 1

(1) All the following are properties of sodium element, except that it

- (A) is a metal. (B) has metallic luster.
(C) is a bad electrical conductor. (D) is formable.

(2) Which of the following is the correct arrangement of the hardness of sodium $_{11}\text{Na}$, magnesium $_{12}\text{Mg}$ and aluminum $_{13}\text{Al}$?

- (A) $\text{Na} > \text{Mg} > \text{Al}$ (B) $\text{Al} > \text{Mg} > \text{Na}$
(C) $\text{Mg} > \text{Na} > \text{Al}$ (D) $\text{Al} > \text{Na} > \text{Mg}$

(3) Element (X) its boiling point is 2807°C and its melting point is 1064°C Which of the following is a property of element (X)?

- (A) Bad electrical conductor. (B) Brittle.
(C) Formable. (D) Opaque.

(4) Which of the following questions helps in the classification of some elements to metals and nonmetals ?

- (A) Is it solid ? (B) Is it liquid ?
(C) Is it coloured ? (D) Is it brittle?



(5) What is the common property of both sodium and copper?

- (A) Colour. (B) Density.
(C) Melting point. (D) Physical state.

(6) If the anion which composes the acid HClO is called hypochlorite, then the acid is called

- (A) hypochlorous acid. (B) hypochloric acid.
(C) perchloric acid. (D) chlorous acid.

(7) What is the ion whose percentage in the solution increases when an acidic oxide dissolves in water?

- (A) H^+ (B) OH^- (C) Cl^- (D) H^+

(8) Element (X) forms the oxide XO which reacts with acids. Which of the following represents (X) and XO ?

- (A) (X): Metal, XO : Acidic oxide. (B) (X): Nonmetal, XO : Acidic oxide.
(C) (X): Metal, XO : Basic oxide. (D) (X): Nonmetal, XO : Basic oxide.

(9) On dissolving calcium oxide in water and placing two litmus strips in the solution, the colour of one of them changes into

- (A) red. (B) purple. (C) blue. (D) yellow.

(10) Which of the following are properties of solid sodium hydroxide ?

- (A) It dissolves in water, and reacts with HCl acid.
(B) It dissolves in water, and does not react with HCl acid.
(C) It does not dissolve in water and does not react with HCl acid.
(D) It does not dissolve in water and reacts with HCl acid.

(11) A red litmus strip is placed in solution (1), so no change in colour occurs, when it is placed in solution (2), it becomes blue.

Which of the following is correct?

- (A) Solution (1): Neutral, Solution (2): Acidic.
(B) Solution (1): Acidic, Solution (2) Neutral.
(C) Solution (1): Acidic, Solution (2) Alkaline.
(D) Solution (1): Alkaline, Solution (2): Acidic.

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(12) The colour of the universal indicator is the same in both

- (A) tomato juice and hydrochloric acid.
- (B) distilled water and sodium chloride solution.
- (C) tomato juice and sodium hydroxide solution.
- (D) distilled water and hydrochloric acid.

(13) All the following from ions that form salts, except

- (A) OH^-
- (B) Cl^-
- (C) NH_4^+
- (D) NO_3^-

(14) All the following are properties of solid sodium carbonate salt, except that

- (A) it dissolves in water.
- (B) pH of its solution is higher than 7
- (C) its colour is white.
- (D) it conducts electricity.

(15) pH value of a solution is changed from 8 to 5, that means it was

- (A) acidic and becomes alkaline.
- (B) acidic and becomes neutral.
- (C) alkaline and becomes neutral.
- (D) alkaline and becomes acidic.

(16) From the table :

Indicator	Colour change	pH at which colour change
(X)	Red $\Rightarrow$ Yellow	4
(Y)	Yellow $\Rightarrow$ Blue	6.4

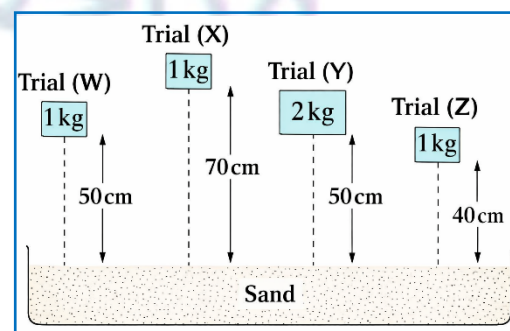
What is the pH value of the solution which acquires yellow colour when drops of both (X) and (Y) are added to it?

- (A) 3
- (B) 5
- (C) 7
- (D) 10

(17) The opposite figure represents an experiment that includes four trials (W) , (X) , (Y) and (Z):

Which of the following shows the controlled variable and the independent variable?

Choices	Trials	Controlled variable	Independent variable
(A)	(W) , (X)	Height	Mass



Ⓑ	(W) , (Y)	Height	Mass
Ⓒ	(X) , (Y)	Mass	Height
Ⓓ	(X) , (Z)	Height	Mass



(18) Which of the following cases involves doing work?

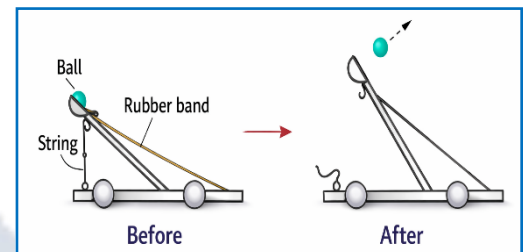
- Ⓐ Lifting a bag from the floor, pushing a shopping cart.
- Ⓑ Carrying a backpack while walking, pushing a shopping cart.
- Ⓒ Lifting a bag from the floor, pushing a tree.
- Ⓓ Carrying a backpack while walking, pushing a tree.

(19) The potential energy of an object depends on

- Ⓐ its weight and speed.
- Ⓑ its weight and mass.
- Ⓒ its weight and height above the ground.
- Ⓓ its speed and height above the ground.

(20) The opposite figure illustrates the motion of a ball after the slingshot string is cut :

Which of the following leads the ball to cover the maximum possible distance?



Choices	Change	As the stored potential energy in the rubber band is
Ⓐ	Using a ball with a greater mass	Less before cutting the string
Ⓑ	Using a longer rubber band	Greater before cutting the string
Ⓒ	Using a shorter rubber band	Less before cutting the string
Ⓓ	Using a shorter string	Greater before cutting the string

12 Define the following (what is meant by)

Unit 1

Metal	.....
Nonmetal	.....

Metallic bond	.....
Alloy	.....
Recycling	.....
Atomic group	.....
Acid	.....
Alkali	.....
Basic oxides	.....
Acidic oxides	.....
Acid rains	.....
Indicators	.....
Universal indicator	.....
pH value	.....
Salts	.....
Path of movement	.....
Distance (d)	.....
Displacement (s)	.....
Speed (v)	.....
Work (W)	.....
Controlling the variables	.....
Independent variable (Cause)	.....
Dependent variable (Effect)	.....
Controlled variables	.....
Energy (E)	.....

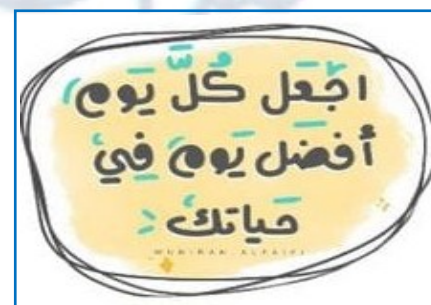
Unit 2

Potential energy (PE)	.....
The distance covered by an object equals 20 m	.....
The displacement of an object equals 10 m	.....
The speed of an object is 100 m/s	.....
A moving car covers a distance of 20 km in 2 h	.....
The potential energy of an object is 20 J	.....
An object with potential energy of 80 J is at a height of 10m	.....

13 compare between each of the following

Unit 1

- 1- Phosphorus - Iron
- 2- Sodium and graphite
- 3- Sulphur and copper
- 4- Silver and phosphorus
- 5- Metals and nonmetals
- 6- Acid and alkali
- 7- HCl and NaOH
- 8- strong acids and weak acids



9- Strong alkalis and weak alkalis

10- Basic oxides and Acidic oxides

11- Ammonium chloride, Sodium chloride and Sodium carbonate solution

14 Various questions

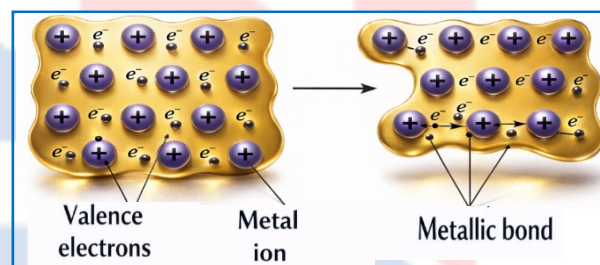
Unit 1

1. Look at picture then answer the following:

a- The metallic bond arises as a result from the force of between the cations and the surrounding negative cloud

b- The metallic bond is responsible for metals and the high of it.

c- The strength of the bond is proportional to both the degree of and the degree of



2. Look at picture then answer the following:

- Humans usually use alloys in industry. **Explain**

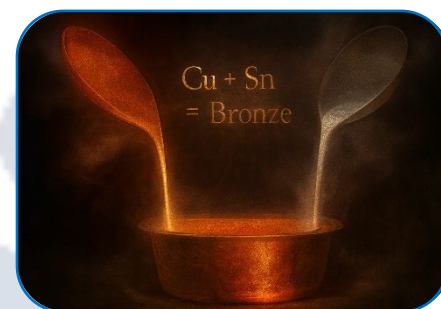
- Alloys are mixtures, most of which cannot be expressed in

- Pure metals are while alloys are

- One of the most famous alloys, bronze alloy, it consists of at a rate of 5%, and with 95% .

- Recycling of metals

- This refers to the conversion of metal into new materials suitable for



6. Physical properties of salts :

Salts differs from each other in :

Color	White	.....
	Blue	.....
	Green	.....
Solubility in water	Soluble salt	.....
	insoluble	.....
pH value	Acidity	.....
	Alkalinity	.....
	Neutral	.....
Electricity		.....
		

The salinity of dead sea is higher than that of the red sea, and therefore its density (no object can sink in it)

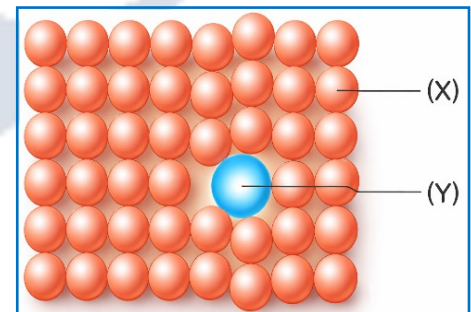
7. The opposite figure illustrates the composition of the bronze alloy:

(1) What are the elements (X) and (Y)?

.....

(2) Why are alloys preferred to be used more than the pure metals?

.....



8. The table below shows the properties of 3 elements (a metal, a nonmetal and a metalloid) without order:

Element		Properties		
(X)	Solid at room temperature.	Shiny.	Brittle.	Heat conductor.
(Y)	Solid at room temperature.	Shiny.	Soft.	Electrical conductor.

(Z)	Solid at room temperature.	Opaque.	Brittle.	Bad electrical conductor
-----	----------------------------	---------	----------	--------------------------

Identify the metal and the nonmetal of these elements, with explanation.

.....

9. Can the type of potassium hydroxide solution be identified by using the blue litmus strip? Explain.

.....

10. Element (X) oxide has the following properties:

- ❖ It can react with acids.
- ❖ It does not react with alkalis.

Is element (X) sulphur or copper? Explain.

.....

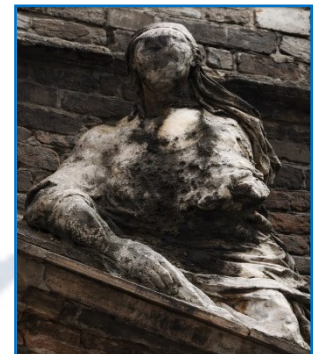
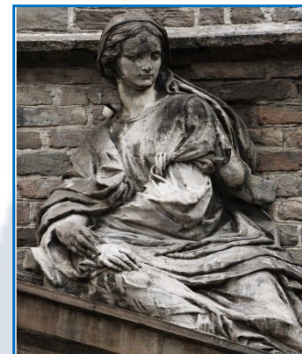


11. The opposite figures show the same statue left in open air for nearly 100 years :

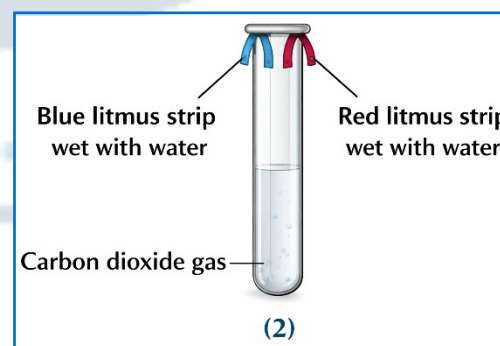
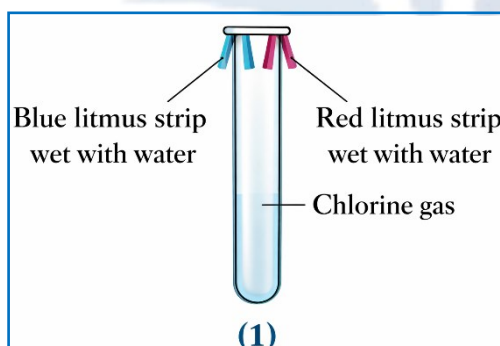
Why did the details of the statue disappear according to what you have studied?

.....

.....



12. What happens to the colours of the litmus strips in the following cases?



13. Acidity of the soil varies from one place to another:

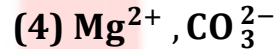
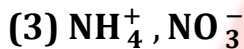
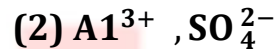
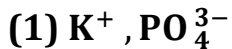
(1) How can acidic soil be treated?

.....

(2) What is the colour of Hydrangea flowers which grow in acidic soil?

.....

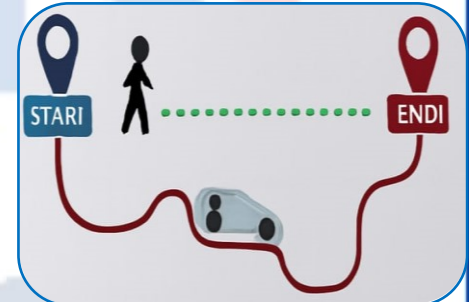
14. Write the molecular formulas of the salts composed from the following cations and anions:



Unit 2

15. Distance or Displacement :

- The path taken by the car represents
- The path taken by the person represents
- The measuring unit for the physical quantity represented by the path of the car is

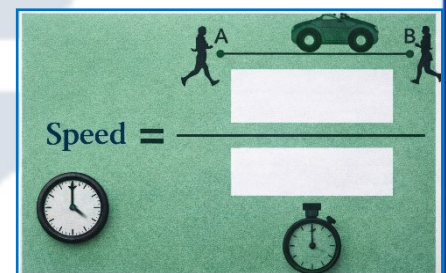


16. Complete the figure :

- Speed is defined as

Speed is measured in units of

- Calculate the speed of an object that covers distance of 10m in a time of 5s.
-



- When is the distance covered equal to the displacement ?
-



- When is the speed equal to the distance covered

17. Look at the two pictures.

-Which one shows work being done?

(Explain your answer.)



2



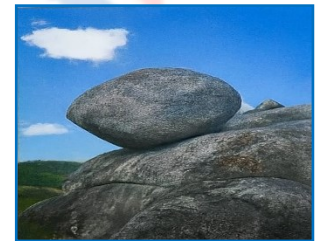
1

- Work is and is symbolized by
..... and its measuring unit is

- The work mathematical relationship

- Energy is and its measuring unit is

- What are the similarities between the static
rock on top of the hill and the static ball on the
playground?



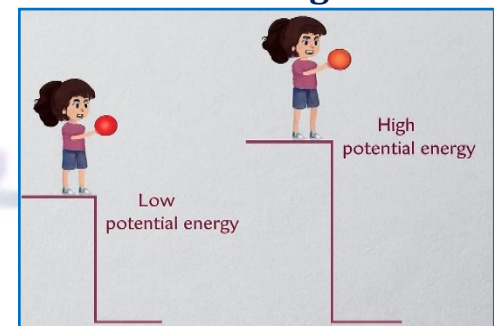
18. From the forms of the potential energy:

1- potential energy like

2- potential energy like

3- potential energy like

19. Explain why the potential energy differs in the two cases shown in the figure.



20. The value of potential energy can be obtained from
the mathematical relationship

21. What happens when the weight of the ball increases?

1

Write down what the following sentences mean

Unit 1

- 1- Elements that have metallic luster and are good conductors of heat and electricity. Metals.
- 2- A liquid metallic element that has good electrical conductivity. Mercury
- 3- Brittle elements in which the last energy level contains more than 4 electrons. Nonmetals.
- 4- A nonmetal that is a good conductor of electricity and used in the dry cells. Carbon (Graphite).
- 5- The atoms of the solid metal are gathered in a certain arrangement. Metallic crystal lattice.
- 6- The attraction force between positive metal ions and the negative valence electron cloud which surrounds them. Metallic bond.
- 7- A mixture composed of the melts of two metals or more. Alloy.
- 8- The process of the conversion of the wastes into new usable substances. Recycling.
- 9- An ion composed of more than one atom of more than one element. Atomic group or polyatomic ion.
- 10- A scientist who clarified that alkalis are substances that dissolve in water and give (produce) hydroxide ions. The scientist Arrhenius.
- 11- Acids produced from the combination of hydrogen with one of the negatively charged atomic groups, excluding hydroxide group. Oxyacids.
- 12- An acid secreted by the stomach that participates in food digestion. Hydrochloric acid.
- 13- An acid accumulated in the muscles of the body during their lack of oxygen, causing muscle cramps. Lactic acid.
- 14- A substance whose dissolution in water leads to an increase in the percentage of H^+ cations in the solution. Acid
- 15- A substance whose dissolution in water leads to an increase in the percentage of OH^- anions in the solution. Alkall.
- 16- The cation which is responsible for the properties of the acids. Hydrogen cation.
- 17- The anion which is responsible for the properties of the alkalis. Hydroxide anion.

- 18- Acids that are good electrical conductors. **Strong acids.**
- 19- Metal oxides, some of which dissolve in water forming alkalis. **Basic oxides**
- 20- Nonmetal oxides that dissolve in water forming acids. **Acidic oxides.**
- 21- Rains which result from the dissolution of acidic oxides in the atmospheric water vapour. **Acid rains.**
- 22- Chemical substances whose colour differs in acidic medium from that in alkaline medium. **Chemical indicators.**
- 23- An indicator that can differentiate between the different acids or the different alkalis according to their strength. **Universal indicator.**
- 24- A plant whose flowers colour differs depending on the acidity or the basicity of the soil. **Hydrangea plant.**
- 25- A Danish scientist who developed pH scale to differentiate between acidic, basic and neutral solutions. **The scientist Soren Sorensen.**
- 26- A scale that ranges between the values 0 to 14, and is used to determine the acidity and the basicity of solutions. **pH scale.**
- 27- A device used to measure the pH value of solutions directly and accurately. **pH meter device.**
- 28- Compounds, mostly ionic, formed from the combination of an alkali cation with an acid anion. **Salts.**
- 29- The set of points through which the object passes during its motion. **Path of movement.**
- 30- The total length of any path taken by the object during its moving from the starting point to the end point. **Distance.**
- 31- The shortest straight path connecting between the starting point and the end point in a constant direction. **Displacement.**
- 32- The distance covered per unit time. **Speed.**
- 33- The amount of energy required to move an object through a certain displacement in the same direction of the force acting on it. **Work.**
- 34- The quotient of the work done divided over the displacement, which is estimated in newtons. **Force.**



- 35- One of the skills in scientific research and designing scientific comparative experiments. Controlling variables.
- 36- The variable which is changed during the experiments. Independent variable.
- 37- The variable to be tested which is being changed in response to changing the independent variable. Dependent variable.
- 38- The variables that are controlled to remain constant throughout the experiment. Controlled variable.
- 39- ability to do work. Energy.
- 40- The energy stored in the object as a result of the work done on it. Potential energy.
- 41- The product of multiplying the mass of the object by the Earth's gravitational field intensity. Weight.

2 Complete the following sentences

Unit 1

- 1- The outer energy level of metals contains less than 4 electrons, while non-metals contain more than 4 electrons.
- 2- Element (A) has two electrons in its outer energy level (M), so its type is Metal and Element (B) has six electrons in its outer energy level (L) has six electrons its type Non-metal.
- 3- All metals are solid substances except Mercury is a liquid
- 4- All non-metals are poor conductors of electricity except Graphite (Carbon) which is a good conductor of electricity.
- 5- Non-metals exists in three states, solid such as Sulfur/Carbon and gaseous, such as Oxygen/Chlorine and the only liquid is Bromine.
- 6- The atoms of solid metals are arranged in a pattern known as Crystal Lattice.
- 7- The metallic bond is occurs as a result of the attraction force between ions positive metal and the surrounding negative electrons cloud.
- 8- Bronze alloy is composed of 5% Tin and 95% Copper. And characterized by being more harder than copper and its resistant for rusting.
- 9- Oxygen acids are those that contain the Oxygen element such as H_2SO_4 and HNO_3

- 10- Hydrochloric acid and **Hydrobromic acid HBr** are acids that do not contain the **Oxygen** element.
- 11- The number of hydrogen atoms in the acid molecule equals the **Anion** charge of the component, while the number of hydroxide groups in the alkali molecule equals the charge of the component **Cation**
- 12- Lactic acid supplies muscles with **Energy** ,When oxygen is deficient and accumulates in the muscles, it causes **Muscles cramps**
- 13- The scientist **Arrhenius** explained that acids are substances that dissolve in water and give **Hydrogen** positive ions, while alkalis give **Hydroxide** negative ion when dissolved in water.
- 14- The total charge of any compound molecule is equal to **Zero**
- 15- The stomach secretes **HCl** acid which helps in **Digestion of food**
- 16- Hydrochloric acid (**HCl**) reacts with sodium hydroxide (**NaOH**) and form salt **Sodium chloride** (NaCl) and **Water** (H_2O) or written (HOH).
- 17- The molecular formula of the alkali containing the cation Ca^{+2} **$Ca(OH)_2$**
- 18- Lemon and ketchup are considered **acids** substances, while toothpaste and baking soda are **alkalis** substances.
- 19- When hydrochloric acid dissolves in water, it produces **hydrogen (H^+)** and **chloride (Cl^-)** ions.
- 20- When magnesium hydroxide dissolves in water, the following ions are formed **magnesium (Mg^{2+})** and **hydroxide (OH^-)**
- 21- Acids react with alkalis to form **Salt** and **water**
- 22- Nitric acid is considered a **strong** acid, while nitrous acid and sulphurous acid are **weak** acids.
- 23- Metals burn in an oxygen atmosphere and form **basic oxides** most of them are known as **metallic** oxides
- 24- Non-metals burn in an oxygen atmosphere and form **acidic oxides** most of them are known as **non-metallic** oxides
- 25- The dissolution of sulphur trioxide in water produces **sulphuric acid (H_2SO_4)**
- 26- Melting **magnesium oxide (MgO)** in water produces magnesium hydroxide **$Mg(OH)_2$**

- 27- The combustion of fossil fuels produces oxides **sulfur** and **nitrogen**
- 28- **Indicators** chemicals that change colour in an acidic medium compared to a basic medium, such as **litmus paper**
- 29- We reduce soil acidity by adding substances such as **calcium hydroxide** Ca(OH)_2
- 30- The pH value of acids Less than 7, while in **alkali** it is greater than 7.
- 31- The pH value of a solution of table salt (sodium chloride) is **=7 (neutral)**
- 32- The hydrogen number is accurately measured using **pH meter**
- 33- Acidic gases **SO_2** and **CO_2**
- 34- Basic gases **NH_3** and **NO**
- 35- Neutral gases on litmus paper are **oxygen (O_2)** and **nitrogen (N_2)**
- 36- Produced by the reaction of acids with alkali **salt** and **water**
- 37- Copper sulphate salt is **blue** in colour, while **zinc sulphate** salt is white in colour.
- 38- **Calcium sulphate** Salt consists of calcium cation and sulphate anion
- 39- Ammonium chloride solution turns litmus paper **red**, while **sodium hydroxide (NaOH)** solution blue litmus paper.
- 40- The measuring unit of distance and displacement **meter (m),cm,km**
- 41- The measuring unit of speed **(m/s)and (km/h)**
- 42- Speed = **distance ÷ time**
- 43- The measuring unit of work **joule (J) and newton.meter (N.m)** while the newton is the measuring unit of **force**
- 44- **Work** = force × displacement
- 45- Factors affecting potential energy are **weight (w)** and **height (h)**
- 46- The measuring unit of weight **newton (N)**
- 47- Potential energy = **mass × gravitational acceleration (g) × height**
- 48- 5 km **5000** m, 3kJ = **3000** J



Unit 2

- 49- The set of points through which a body passes during its motion is known as **path of movement**
- 50- **Displacement** It is defined as the shortest straight line between the starting point and the end point.
- 51- The distance traveled during a unit of time is defined as **speed** while the ability to perform work is called **energy**
- 52- Energy is measured in units of **joule(J)** and work is measured in units of **joule(J)**
- 53- Mass is measured in units of **kilogram (kg)** and weight is measured in units of **newton (N)**
- 54- The work done is directly proportional to **force** and **displacement**.

3

Choose the odd word (or phrase) out, then mention the relation between the rest:

Unit 1

- Gold / Silver / **Bromine** / Mercury The others are metals (Bromine is a liquid non-metal).
- Phosphorus / Bromine / **Mercury** / Sulfur The others are non-metals (Mercury is a liquid metal).
- Graphite / **Bromine** / Phosphorus / Sulfur The others are solid non-metals (Bromine is liquid).
- Iodine / Sulfur / Carbon / **Hydrogen** The others are solid non-metals (Hydrogen is a gas)
- Bronze / **Chlorine** / Copper / Tin The others are metals (Chlorine is a gaseous non-metal).

4

Give reason for (scientific explanation) for each of the following

Unit 1

- Calcium ($_{20}\text{Ca}$) is metal while Chlorine ($_{17}\text{Cl}$) is non-metal.
Because Calcium has 2 electrons in its last energy level (2, 8, 8, 2), while Chlorine has 7 electrons in its last energy level (2, 8, 7).
- Carbon is used in the manufacture of dry columns even though it is not a metal.
Because it is a good conductor of electricity.
- Calcium ($_{20}\text{Ca}$) is harder than sodium ($_{11}\text{Na}$).
Because Calcium has 2 valence electrons, while Sodium has only 1. The strength of the Metallic Bond increases as the number of valence electrons increases.

4- Bronze alloy is used in the manufacture of medals instead of copper.
Because Bronze is harder, stronger, and more resistant to rust than pure copper.

5- Acids turn blue litmus paper into red.
Because it has high present of H^+ on its solutions



6- Alkalis turn red litmus paper into blue.
Because it has high present of OH^- on its solutions

7- Magnesium milk is used to treat stomach acidity.
To neutralize gastric hyperacidity as it contains magnesium hydroxide $Mg(OH)_2$

8- Litmus paper is not suitable for distinguishing between strong and weak acids.
Because it gives the same colour with both of them (red).

9- Distilled water does not affect litmus paper.
Because the number of H^+ cations equals the number of OH^- anions in the solution

10- A pH meter is more accurate than universal strips in determining the pH value of a solution.
Because pH meter device determines the pH value of any solution directly and accurately as indicated by the number displayed immediately on its digital screen, while universal indicator strips provide an approximate pH value.

11- Sodium chloride salt is an ionic compound
Because it are produced from the reaction of acids(HCl) with alkalis($NaOH$), which the alkali cation(Na) combines with the acid anion(Cl) forming $NaCl$.

12- It cannot sink in the Dead Sea.
Because the high percentage of the salts in water leads to increasing its density.

13- Graphite is used to make the positive electrode of a dry cell battery (battery stone).
Because graphite is the only nonmetal which is a good electrical conductor.

14- Aluminum ($_{13}Al$) is harder and has a higher melting point than sodium ($_{11}Na$).
Because the number of valence electrons in aluminum atom (3) is greater than that in sodium atom (1) and as the number of valence electrons in metal atom increases, the strength of the metallic bond increases, so it is harder and has a higher melting point.

15- Metals are good conductors of electricity.
Because they contain free electrons that move freely throughout the metallic structure

16- Bronze is more resistant to rust than pure copper.
Because it is harder than copper and resistant to rust.

17- Magnesium chloride molecule is composed of one magnesium cation and two chloride anions.

Because the total charge of any salt equals zero, and magnesium cation carries two positive charges, while chloride anion carries one negative charge.

18- Calcium is added to acidic soil.

To treat the acidic soil by calcium hydroxide

19- The color of hydrangea flowers changes depending on the type of soil.

Because the flowers turn blue when planted in acidic soil, while they turn red when planted in basic soil.

20- Chemical indicators only work in the presence of water.

Because the chemical indicators act, generally, only in aqueous medium

21- Some metallic elements are recycled.

For the following reasons :

- ❖ Their percentages in the Earth's crust decreases.
- ❖ The difficulty of extracting them from their ores.
- ❖ The lower cost of recycling compared to extracting them from their ores.



22- Occurrence of acid rain occurs.

As it causes the destruction of forests, harms the aquatic organisms, results in the corrosion of buildings, and leads to health problems in human respiratory system.

23- Hydrochloric acid is used in the digestion of food.

Because it participate in digestion process

24- Muscle tension occurs when there is a lack of oxygen in the muscles.

Due to accumulation of lactic acid in muscles

25- Copper is used in the manufacture of electrical wires.

Because it is good electrical conductor of electricity

26- Most alloys are not expressed in molecular form.

As the alloys are mixtures not compounds

Unit 2

27- The speed of the moving object decreases if it required longer time to cover the same distance.

Because the speed is inversely proportional to time at constant distance.

28- When the speed of an object increases, the covered distance at the same time increases.

Because the speed is directly proportional to distance at constant time.

29- A person pushing against a wall does not perform work.

Because the displacement equals zero.

30- A person pushing a shopping cart performs work.

Because the direction of the force applied is in the same direction of the motion.

31- The role of fuel within a car is similar to the role of food within a living organism.

Because the chemical energy found in food and fuel is the potential energy stored in the chemical bonds, released and converted into kinetic energy when a chemical reaction occurs.

5 what can be observed when (what happen if)

Unit 1

1- Hammering a piece of graphite

The piece of graphite crumbles easily because graphite is a brittle nonmetal (not malleable).

2- Increasing the number of valence electrons in metal atoms relative to the metallic bond

The metallic bond becomes stronger, and the metal becomes harder with a higher melting point.

3- Mixing molten gold with molten copper.

An alloy is formed whose properties differ from those of both metals.

4- Passing an electric current through sulphuric acid and acetic acid in relation to lighting a lamp

When the electric current passes in sulphuric acid solution the bulb becomes brighter, while when it passes in acetic acid solution the bulb becomes lower brightness

5- The reaction of acids with alkalis

A salt and water are formed.

6- Heat a piece of magnesium and add the result to water, then place a red litmus paper in the solution.

The red litmus paper will turn blue due to magnesium hydroxide solution ($\text{Mg}(\text{OH})_2$).

7- Melting sulphur oxides in rainwater

Sulphur trioxide (SO_3) is formed, which dissolves in water to produce sulphuric acid solution (H_2SO_4) causing acid rain

8- Place a piece of sugar in a test tube containing concentrated sulphuric acid.

The sugar becomes charred and black

9- Place a red and a blue sunflower paper in a tube containing hydrogen gas.

Both of them doesn't change in colour

10- Place a red and a blue sunflower paper in a tube containing chlorine gas.

The colour of both litmus strips (bleaches both of them).

11- Add calcium hydroxide to acidic soil.

To treat it from acidity and become suitable to planting

12- You dip two litmus strip in a cup containing an acidic solution.

The blue litmus strip change into red

13- You dip two litmus strip in a cup containing an alkaline solution.

The red litmus strip change into blue

14- You dip two litmus strip in a cup containing distilled water.

Both of them doesn't change in colour

15- Accumulation of lactic acid in muscles.

Muscle cramps occur.

16- Combustion of metal with oxygen.

The basic oxide will be formed

17- Combustion of non-metal with oxygen.

The acidic oxide will be formed

18- Melting of sulfur and nitrogen oxides in water vapor in the atmosphere.

This causes the precipitation of the acid rains.

19- Increasing in body weight relative to its potential energy.

The potential energy will increase

20- Decreasing in distance traveled during the same time.

The speed will decrease

21- Strong impact on an object with zero displacement.

The work done = zero because : $W = F \times d = F \times 0 = 0$



22- Vehicles exceed the permitted speed limits.

This results in increasing the road accidents.

23- A moving object covers the same distance it travelled in half the time (Regarding its speed).

The speed of the moving object doubles.

24- Exerting a suitable force on a stationary object (an object at rest).

The object moves for a certain displacement in the same direction of the force.

25- The force which affects an object increases in the direction of its movement (Regarding the work done).

The work increases.

26- The weight of an object is doubled while its height above the ground remains constant (Regarding its potential energy).

The potential energy doubles.

27- The vertical distance to which the object is lifted above the ground decreases to half while its weight remains constant (Regarding its potential energy).

The potential energy decreases to half.

6

Answer the following

Unit 1

1. What is the benefit of recycling metal waste?

1- Decreasing of their abundance (percentage) in the Earth's crust.

2- Difficulty of extracting them from their ores.

3- The lower cost of recycling them compared to extracting them from their ores.

2. Two elements (A, B) their melting points is (1538°C – 115.21°C)

A- What type are they? Explain your answer.

Element (A) is a Metal (high melting point). Element (B) is a Non- metal (very low melting point).

B - Which one is a good conductor of electricity?

Element (A).

C - Which one can be hammered and drawn?

Element (A).



Unit 2

3. Calculate the time taken by a car moving at a speed of 40 m/s to cover a distance of 200 m

$$t = \frac{d}{v} = \frac{200}{40} = 5 \text{ s}$$

4. Calculate the height of an object of mass 6 kg above the ground when its potential energy is 180 J , knowing that the gravitational field intensity is 10 N/kg

$$w = m \times g = 6 \times 10 = 60 \text{ N}$$

$$h = \frac{PE}{w} = \frac{180}{60} = 3 \text{ m}$$

5. Calculate the speed of an object that covers distance of 50 km in 2 h .

$$v = \frac{d}{t} = \frac{50}{2} = 25 \text{ km/h}$$

6. Calculate the time required to cover a distance of 300 m if the object moves at a speed of 20 m/s .

$$t = \frac{d}{v} = \frac{300}{20} = 15 \text{ s}$$

7. A person pushes an object with a force of 40 N , causing it to move in a straight line for a distance of 10 m . Calculate the amount of work done.

$$w = f \times s = 40 \times 10 = 400 \text{ J}$$

8. Calculate the potential energy of an object with a mass of 15 kg at a height of 150 cm , given that the acceleration due to gravity is 10 m/s^2 .

$$PE = m \times g \times h = 15 \times 10 \times \left(\frac{150}{100}\right) = 225 \text{ J}$$

9. An object moves at a speed of 20 km/h . Calculate the distance traveled after 3 h .

$$d = v \times t = 20 \times 3 = 60 \text{ km}$$

10. An object exerted a work of (50 J) to move a wheel a distance of (10 m) . Calculate the amount of force required to exert the work.

$$F = \frac{\text{Work}}{\text{distance}} \quad F = 50 \div 10 = \boxed{5 \text{ Newton}}$$

11. An object has a potential energy (240 J) at a height of (12 m) . Calculate the weight of the object.

$$W = \frac{PE}{h} \quad W = 240 \div 12 = \boxed{20 \text{ Newton}}$$

12. What factors determine potential energy?

weight (w) of the object and Height (h) above the ground



13. What is the relationship between work and both force and displacement?

Work is directly proportional to both force and displacement.

14. What mathematical relationship is used to calculate velocity?

$$v = \frac{d}{t}$$

15. What mathematical relationship is used to calculate work? $w = f \times s$

16. What mathematical relationship is used to calculate potential energy given weight?

$$PE = w \times h$$

17. What mathematical relationship is used to calculate potential energy given mass?

$$PE = m \times g \times h$$

18. What are the conditions for doing work?

- A force must be applied on the object
- The object must have a displacement in the same direction of the force

Unit 1

7

Write the chemical formula for the following compounds

	Name	Formula
1	Hydrochloric acid	HCl
2	Hydrobromic acid	HBr
3	Sulphuric acid	H ₂ SO ₄
4	Phosphoric acid	H ₃ PO ₄
5	Nitric acid	HNO ₃
6	Potassium hydroxide	KOH
7	An atomic group consisting of three elements	HCO ₃
8	Nitrous acid	HNO ₂
9	Sodium chloride	NaCl
10	Calcium hydroxide	Ca(OH) ₂
11	Aluminum sulfate	Al ₂ (SO ₄) ₃
12	Potassium nitrate	KNO ₃
13	Sodium carbonate	Na ₂ CO ₃
14	Magnesium oxide	MgO
15	Calcium phosphate	Ca ₃ (PO ₄) ₂
16	Iron (III) chloride	FeCl ₃
17	Hydrogen sulfide	H ₂ S

18	Ammonium hydroxide	NH_4OH
19	Sulfuric acid	H_2SO_4
20	Sulfur dioxide	SO_2
21	Nitrogen monoxide	NO
22	Silver nitrate	AgNO_3
23	Sodium sulfide	Na_2S
24	Aluminum oxide	Al_2O_3
25	Sodium hydroxide	NaOH

8

What is the use(function) of each of the following

Unit 1

	Subject	Function / Use
1	Stomach acid	Helps in digestion of food
2	Litmus paper	Differentiates between acidic, alkaline and neutral substances
3	Graphite	Used in the manufacture of the dry cell
4	Bronze alloy	Used in the manufacture of jewellery, statues and medals
5	Recycling of elements	• Their percentages in the Earth's crust decreases • The difficulty of extracting them from their ores • The lower cost of recycling compared to extracting them from their ores
6	Lactic acid	Provides muscles with the necessary energy during their lack of oxygen during muscular effort
7	Magnesium milk	It is used as a temporary treatment to neutralize gastric hyperacidity
8	Sulfur and nitrogen oxides	Form acid rain
9	Acidic oxides	Form acids
10	Basic oxides	Form alkalis
11	Adding tin to copper	Bronze alloy formed
12	Adding calcium hydroxide to soil	A basic substance that treats the acidic soil
13	Universal guide	Provides an approximate measuring of the pH values for the solutions

14	pH meter	Determination of pH values for any solutions directly and accurately
15	Scientist Soren Sorensen	Developed the pH scale
16	Scientist Arrhenius	Classified the acid and alkali

9 Write the names of the following compounds and state their type

Unit 1

	Formula	Name	Type
1	H_2CO_3	Carbonic acid	Acid
2	H_2S	Hydrogen sulphide	Acid
3	H_3PO_4	Phosphoric acid	Acid
4	NaCl	Sodium chloride	Salt
5	$\text{Ca}(\text{OH})_2$	Calcium hydroxide	Base
6	$\text{Al}_2(\text{SO}_4)_3$	Aluminum sulfate	Salt
7	KNO_3	Potassium nitrate	Salt
8	Na_2CO_3	Sodium carbonate	Salt
9	MgO	Magnesium oxide	Base
10	$\text{Ca}_3(\text{PO}_4)_2$	Calcium phosphate	Salt
11	H_2S	Hydrogen sulphide	Acid
12	NH_4OH	Ammonium hydroxide	Base
13	H_2SO_4	Sulfuric acid	Acid
14	HNO_3	Nitric acid	Acid

15	HCl	Hydrochloric acid	Acid
16	SO ₂	Sulfur dioxide	Oxide
17	NO	Nitrogen monoxide	Oxide
18	AgNO ₃	Silver nitrate	Salt
19	CuSO ₄	Copper sulfate	Salt
20	Na ₂ S	Sodium sulfide	Salt
21	NaHCO ₃	Sodium bicarbonate	Salt
22	Al ₂ O ₃	Aluminum oxide	Base
23	MgSO ₄	Magnesium sulfate	Salt

10

Give one example for each of the following, writing the molecular formula

Unit 1

	Term	Example	Formula
1	Weak acid	sulfurous acid	H ₂ SO ₃
2	Strong acid	Sulfuric acid	H ₂ SO ₄
3	Strong base	Sodium hydroxide	NaOH
4	Weak base	Ammonium hydroxide	NH ₄ OH
5	Metal oxide	Magnesium oxide	MgO
6	Non-metal oxide	Sulfur dioxide	SO ₂
7	Gas that turns blue litmus red	Hydrochloric acid gas	HCl
8	Gas that turns red litmus blue	Ammonia gas	NH ₃
9	Gas that has no effect on litmus	Oxygen	O ₂
10	Chemical indicator that accurately measures pH	Universal indicator	pH meter
11	White salts	Sodium chloride	NaCl
12	Colored salt	Copper sulfate (blue)	CuSO ₄
13	Salts that dissolve in water	Potassium nitrate	KNO ₃

14	Salts poorly soluble in water	Calcium carbonate	CaCO_3
15	Metals	Copper	Cu
16	Non-metals	Sulphur	S
17	Alloys	Bronze	Cu + Sn
18	Acids	Nitric acid	HNO_3
19	Bases	Calcium hydroxide	Ca(OH)_2
20	Oxides	Aluminum oxide	Al_2O_3
21	Salts	Sodium carbonate	Na_2CO_3
22	Monovalent atomic group	Nitrate group	NO_3^-
23	Divalent atomic group	Sulfate group	SO_4^{2-}
24	Trivalent atomic group	Phosphate group	PO_4^{3-}
25	Oxyacid	Phosphoric acid	H_3PO_4
26	Non-oxygenic acid	Hydrochloric acid	HCl
27	Acid in your body	Hydrochloric acid (stomach)	HCl
28	Alkaline	Potassium hydroxide	KOH
29	Metallic oxide	Iron oxide	Fe_2O_3
30	Non-metallic oxide	Carbon dioxide	CO_2
31	Alkaline substance used as medicine	Magnesium hydroxide	Mg(OH)_2
32	Body that performs work	A moving car / falling object	—
33	Body that does not perform work	A stationary rock / wall	—

11 Choose the correct answer

Unit 1

1. All the following are properties of sodium element, except that it

- (A) is a metal. (B) has metallic luster.
 (C) is a bad electrical conductor. (D) is formable.

2. Which of the following is the correct arrangement of the hardness of sodium $_{11}\text{Na}$, magnesium $_{12}\text{Mg}$ and aluminum $_{13}\text{Al}$?

- (A) $\text{Na} > \text{Mg} > \text{Al}$ (B) $\text{Al} > \text{Mg} > \text{Na}$
 (C) $\text{Mg} > \text{Na} > \text{Al}$ (D) $\text{Al} > \text{Na} > \text{Mg}$

3. Element (X) its boiling point is 2807°C and its melting point is 1064°C Which of the following is a property of element (X)?
- (A) Bad electrical conductor. (B) Brittle.
(C) Formable. (D) Opaque.
4. Which of the following questions helps in the classification of some elements to metals and nonmetals ?
- (A) Is it solid ? (B) Is it liquid ?
(C) Is it coloured ? (D) Is it brittle?
5. What is the common property of both sodium and copper?
- (A) Colour. (B) Density.
(C) Melting point. (D) Physical state.
6. If the anion which composes the acid HClO is called hypochlorite, then the acid is called
- (A) hypochlorous acid. (B) hypochloric acid.
(C) perchloric acid. (D) chlorous acid.
7. What is the ion whose percentage in the solution increases when an acidic oxide dissolves in water?
- (A) H^{+} (B) OH^{-} (C) Cl^{-} (D) H^{+}
8. Element (X) forms the oxide XO which reacts with acids. Which of the following represents (X) and XO ?
- (A) (X): Metal, XO : Acidic oxide. (B) (X): Nonmetal, XO : Acidic oxide.
(C) (X): Metal, XO : Basic oxide. (D) (X): Nonmetal, XO : Basic oxide.
9. On dissolving calcium oxide in water and placing two litmus strips in the solution , the colour of one of them changes into
- (A) red. (B) purple. (C) blue. (D) yellow.
10. Which of the following are properties of solid sodium hydroxide ?
- (A) It dissolves in water, and reacts with HCl acid.
(B) It dissolves in water, and does not react with HCl acid.
(C) It does not dissolve in water and does not react with HCl acid.
(D) It does not dissolve in water and reacts with HCl acid.

11. A red litmus strip is placed in solution (1), so no change in colour occurs, when it is placed in solution (2), it becomes blue.

Which of the following is correct?

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- (A) Solution (1): Neutral , Solution (2): Acidic.
 (B) Solution (1): Acidic , Solution (2) Neutral.
 (C) **Solution (1): Acidic , Solution (2) Alkaline.**
 (D) Solution (1): Alkaline , Solution (2): Acidic.

12. The colour of the universal indicator is the same in both

- (A) tomato juice and hydrochloric acid.
 (B) **distilled water and sodium chloride solution.**
 (C) tomato juice and sodium hydroxide solution.
 (D) distilled water and hydrochloric acid.

13. All the following from ions that form salts, except

- (A) **OH^-** (B) Cl^- (C) NH_4^+ (D) NO_3^-

14. All the following are properties of solid sodium carbonate salt, except that

- (A) it dissolves in water. (B) pH of its solution is higher than 7
 (C) its colour is white. (D) **it conducts electricity.**

15. pH value of a solution is changed from 8 to 5, that means it was

- (A) acidic and becomes alkaline. (B) acidic and becomes neutral.
 (C) alkaline and becomes neutral. (D) **alkaline and becomes acidic.**

16. From the table :

Indicator	Colour change	pH at which colour change
(X)	Red $\Rightarrow$ Yellow	4
(Y)	Yellow $\Rightarrow$ Blue	6.4

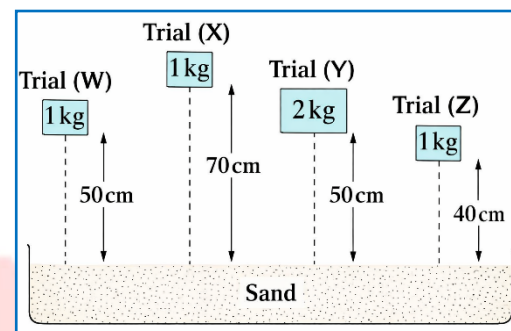
What is the pH value of the solution which acquires yellow colour when drops of both (X) and (Y) are added to it?

- (A) 3 (B) **5** (C) 7 (D) 10

17. The opposite figure represents an experiment that includes four trials (W) , (X) , (Y) and (Z):

Which of the following shows the controlled variable and the independent variable?

Choices	Trials	Controlled variable	Independent variable
(A)	(W) , (X)	Height	Mass
(B)	<u>(W) , (Y)</u>	<u>Height</u>	<u>Mass</u>
(C)	(X) , (Y)	Mass	Height
(D)	(X) , (Z)	Height	Mass



18. Which of the following cases involves doing work?

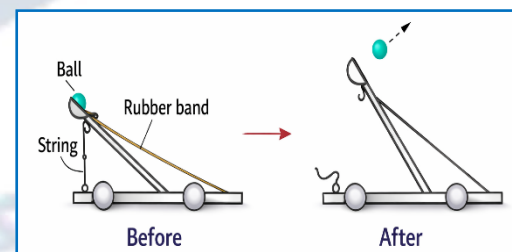
- (A) Lifting a bag from the floor, pushing a shopping cart.
- (B) Carrying a backpack while walking, pushing a shopping cart.
- (C) Lifting a bag from the floor, pushing a tree.
- (D) Carrying a backpack while walking, pushing a tree.



19. The potential energy of an object depends on

- (A) its weight and speed.
- (B) its weight and mass.
- (C) its weight and height above the ground.
- (D) its speed and height above the ground.

20. The opposite figure illustrates the motion of a ball after the slingshot string is cut :



Which of the following leads the ball to cover the maximum possible distance?

Choices	Change	As the stored potential energy in the rubber band is
(A)	Using a ball with a greater mass	Less before cutting the string
(B)	Using a longer rubber band	Greater before cutting the string

©	Using a shorter rubber band	Less before cutting the string
©	<u>Using a shorter string</u>	<u>Greater before cutting the string</u>

12 Define the following (what is meant by)

Unit 1

Metal	<u>A substance in which the outermost energy level of the atom contains 1, 2 or 3 electrons.</u>
Nonmetal	<u>A substance in which the outermost energy level of the atom contains - mostly - 5, 6 or 7 electrons.</u>
Metallic bond	<u>The (electrostatic) attraction force between the positive metal ions and the negative valence electron cloud which surrounds them.</u>
Alloy	<u>A mixture composed of the melts of two or more metals.</u>
Recycling	<u>The process of the conversion of the wastes into new usable substances.</u>
Atomic group	<u>An ion composed of more than one atom of more than one element.</u>
Acid	<u>A substance whose dissolution in water (dissociation) increases the percentage of hydrogen cations (H^+) in the solution.</u>
Alkali	<u>A substance whose dissolution in water (dissociation) increases the percentage of hydroxide anions (OH^-) in the solution.</u>
Basic oxides	<u>Metal oxides, some of which dissolve in water forming alkalis.</u>
Acidic oxides	<u>Nonmetal oxides that dissolve in water forming acids.</u>
Acid rains	<u>Rain resulting from the dissolution of acidic oxides in atmospheric water vapour.</u>
Indicators	<u>Chemical substances whose colour differs in acidic medium from that in alkaline medium.</u>

Universal indicator	<u>An indicator that can differentiate between acids and alkalis</u> <u>Universal indicator or between different acids or different alkalis, based on their pH value</u> Salts strength.
pH value	<u>A scale ranging between the values 0 to 14, used to determine the acidity and the basicity of solutions.</u>
Salts	✓ <u>Ionic compounds formed by the combination of an alkali cation with an acid anion.</u> ✓ <u>Ionic compounds produced from the reactions of acids with alkalis.</u>
Path of movement	<u>A set of points that the object passes through its motion.</u>
Distance (d)	<u>The total length of any path taken by the object while moving from the starting point to the end point.</u>
Displacement (s)	<u>The shortest straight path connecting between the starting point and the end point in a constant direction.</u>
Speed (v)	<u>The distance covered per unit time.</u>
Work (W)	<u>The amount of energy required to move an object through a certain displacement in the same direction of the force which acts on it.</u>
Controlling the variables	<u>One of the skills in scientific researching and designing scientific comparative experiments.</u>
Independent variable (Cause)	<u>The variable which is changed during the experiment.</u>
Dependent variable (Effect)	<u>The variable to be tested, which is being changed in response to changing the independent variable.</u>
Controlled variables	<u>The variables that are controlled to remain constant throughout the experiment.</u>
Energy (E)	<u>The ability to do work.</u>

Unit 2

Potential energy (PE)	<u>The energy stored in an object as a result of the work done on it</u>
The distance covered by an object equals 20 m	<u>This means that the total length of the path taken by this object while moving from the starting point to the end point equals 20 m</u>
The displacement of an object equals 10 m	<u>This means that the length of the shortest straight path connecting between the starting point and the end point of this object in a constant direction equals 10 m</u>
The speed of an object is 100 m/s	<u>This means that this object covers a distance of 100 m in 1 second.</u>
A moving car covers a distance of 20 km in 2 h	<u>This means that the speed of this car equals 10 km/h</u> $V = \frac{d}{t} = \frac{20}{2} = 10 \text{ km/h}$
The potential energy of an object is 20 J	<u>This means that the energy stored in the object as a result of the work done on it is 20 J</u>
An object with potential energy of 80 J is at a height of 10m	<u>This means that the weight of the object equals 8 N</u> $W = \frac{PE}{h} = \frac{80}{10} = 8 \text{ N}$

13 compare between each of the following

Unit 1

1- Phosphorus - Iron

Property	Phosphorus (Non-metal)	Iron (Metal)
Metallic Luster	<u>opaque (No luster)</u>	<u>Has a shiny metallic luster</u>
Malleability and ductility	<u>Not malleable and ductile</u>	<u>Malleable and ductile</u>
Electrical Conductivity	<u>Bad conductor</u>	<u>Good conductor</u>

Melting point	<u>Low</u>	<u>High</u>
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2- Sodium and graphite

Comparison Point	Sodium	Graphite
a) Metallic Luster	<u>Have metallic luster (Shiny)</u>	<u>Do not have metallic luster (opaque)</u>
Which is Opaque (Dull)?	<u>Not opaque</u>	<u>Opaque</u>

3- Sulphur and copper

Property	Sulfur	Copper
Malleability & Ductility	<u>Non-malleable</u>	<u>malleable and ductile</u>
Which is Brittle?	<u>Brittle</u>	<u>Not brittle</u>

4- Silver and phosphorus

Property	Silver (Metal)	Phosphorus (Non-metal)
Electrical Conductivity	<u>Good electrical conductor</u>	<u>Bad electrical conductor</u>

5- Metals and nonmetals

	Metals	Nonmetals
Electrons in the last energy level	<u>Less than 4 electrons (1, 2 or 3 electrons)</u>	<u>More than 4 electrons (5, 6 or 7 electrons)</u> <u>Except for hydrogen 1 electron and carbon 4 electrons</u>
Physical state	<u>All of them are solids, except mercury element (liquid)</u>	<u>They are either solids or gases, except bromine element (liquid)</u>
Metallic	<u>They have metallic luster (shiny)</u>	<u>They do not have metallic luster</u>

luster		<u>(opaque)</u>
Ductility, malleability formability	<u>They are ductile, malleable and formable</u>	<u>They are not ductile, malleable or and (brittle)</u>
Conductivity of heat and electricity	<u>Good conductors of heat and electricity</u>	<u>Bad conductors of heat and electricity, except for graphite, which is a good conductor of electricity</u>
Melting points	<u>High melting points</u>	<u>Low melting points</u>
Examples	• Aluminum Al • Lithium Li • Zinc Zn • Iron Fe • Potassium K • Magnesium Mg • Copper Cu • Silver Ag • Calcium Ca • Mercury Hg	• Carbon (Graphite) C • Sulphur S • Phosphorus P • Fluorine F • Nitrogen N • Bromine Br • Oxygen O

6- Acid and alkali

	Acid	Alkali
Definition	<u>A substance whose dissolution (dissociation) in water increases the percentage of hydrogen cations H^+ in the solution</u>	<u>A substance whose dissolution (dissociation) in water increases the percentage of hydroxide anions OH^- in the solution</u>
Effect on litmus strips	<u>Turns blue litmus strip to red</u>	<u>Turns red litmus strip to blue</u>
Examples	• HCl • HNO_3 • H_2SO_4	• KOH • NaOH • NH_4OH

7- HCl and NaOH

	HCl	NaOH
Type of compound	<u>Strong acid</u>	<u>Strong alkali</u>
Result of each of the dissociation of each them	<u>H⁺ cations and Cl⁻ anions are formed</u>	<u>Na⁺ cations and OH⁻ anions are formed</u>
Effect of each of them on litmus strip	<u>Turns blue litmus strip to red</u>	<u>Turns red litmus strip to blue</u>

8- strong acids and weak acids

Strong acids	Weak acids
<u>Acids that are good electrical conductors</u>	<u>Acids that are weak electrical conductors</u>
<u>Examples :</u> ❖ <u>Hydrochloric acid.</u> ❖ <u>Nitric acid.</u> ❖ <u>Sulphuric acid.</u>	<u>Examples :</u> ❖ <u>Vinegar (dilute acetic acid).</u> ❖ <u>Nitrous acid.</u> ❖ <u>Sulphurous acid.</u>

9- Strong alkalis and weak alkalis

Strong alkalis	Weak alkalis
<u>Alkalis that are good electrical conductors.</u>	<u>Alkalis that are weak electrical conductors.</u>
<u>Examples : Sodium hydroxide solution.</u>	<u>Examples : Ammonium hydroxide solution.</u>

10- Basic oxides and Acidic oxides

	Basic oxides	Acidic oxides
Definition	<u>Metal oxides, some of which dissolve in water forming alkalis</u>	<u>Nonmetal oxides that dissolve in water forming acids</u>
The result of dissolving each of	<u>Alkalis</u>	<u>Acids</u>

them in water		
Examples	❖ <u>Magnesium oxide</u> MgO ❖ <u>Calcium oxide</u> CaO ❖ <u>Sodium oxide</u> Na_2O ❖ <u>Potassium oxide</u> K_2O	❖ <u>Sulphur dioxide</u> SO_2 ❖ <u>Sulphur trioxide</u> SO_3 ❖ <u>Nitrogen dioxide</u> NO_2 ❖ <u>Carbon dioxide</u> CO_2

11- Ammonium chloride, Sodium chloride and Sodium carbonate solution

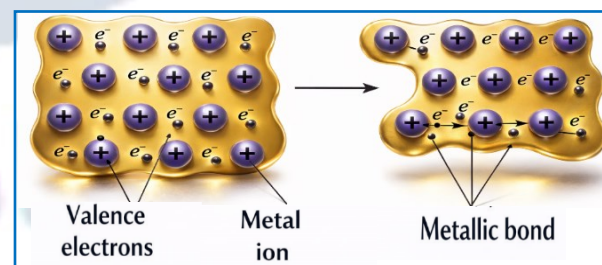
	Ammonium chloride solution	Sodium chloride solution	Sodium carbonate solution
pH of the solution	<u>Less than 7</u>	<u>Equal to 7</u>	<u>Greater than 7</u>
Type of solution	<u>Acidic solution</u>	<u>Neutral solution</u>	<u>Alkaline solution</u>
Effect on litmus strip	<u>Changes the colour of blue litmus strip to red</u>	<u>Does not change the colours of red and blue litmus strips</u>	<u>Changes the colour of red litmus strip to blue</u>
Electrical conductivity	<u>Good electrical conductor</u>		

14 Various questions

Unit 1

1. Look at picture then answer the following:

a- The metallic bond arises as a result from the force of **attraction** between the cations and the **freely moving electrons** surrounding negative cloud



b- The metallic bond is responsible for **hardness** metals and the high **melting point** of it.

c- The strength of the bond is proportional to both the degree of **charge of the cation** and the degree of **number of free valence electrons**.

2. Look at picture then answer the following:

- Humans usually use alloys in industry. **Explain**

alloys used in jewelers ,medals and statues

- Alloys are mixtures, most of which cannot be expressed in **chemical formula**

- Pure metals are **soft** while alloys are **hard**

- One of the most famous alloys, bronze alloy, it consists of **tin** at a rate of 5%, and **copper** with 95% .

- Recycling of metals

- This refers to the conversion of metal **waste** into new materials suitable for **manufacturing new products**.

- Among the most commonly recycled metals are **aluminum, iron and copper**



3. Look at picture then answer the following:

Hydrochloric acid (HCl) :

secreted by **Stomach** and helps in **Digestion**

Lactic acid : Provides **Muscles** with energy when there is a shortage of **Oxygen**



❖ The accumulation of acid **Lactic acid** in the muscles causes **Pain and muscles cramps**

4. Identify the damage caused by acid rain :

A) Destruction of forests.

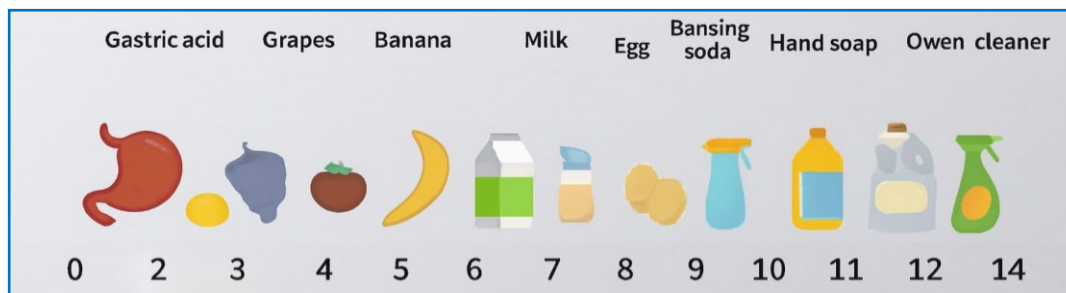
B) Harming the aquatic organisms (which live in water).

c) Corrosion of buildings.

D) Health problems in the human respiratory system.



5. The value of the basic solution increases as the pH number approaches 14



a- Which substances are less acidic ? **milk**

and which are more acidic ? **gastric acid**

b- Which substances are less basic ? **egg**

Which are more basic ? **oven cleaner**

c- The colour of hydrangea flowers varies, where:

- They turn **red** in alkaline soil, and **blue** in acidic soil.



6. Physical properties of salts :

Salts differs from each other in :

Color	White	Zinc sulphate ZnSO_4 , Sodium carbonate Na_2CO_3
	Blue	Copper sulphate CuSO_4
	Green	Nickel chloride NiCl_2
Solubility in water	Soluble salt	All salts (Sodium - Potassium - Ammonium - Nitrate) Copper sulphate - Nickel chloride
	insoluble	All carbonate salts except (Sodium - Potassium - Ammonium) Silver chloride AgCl - Calcium carbonate CaSO_4
pH value	Acidity	Ammonium chloride NH_4Cl $\text{pH} \leq 7$
	Alkalinity	Sodium carbonate solution Na_2CO_3 $\text{pH} \geq 7$
	Neutral	Sodium chloride NaCl $\text{pH} = 7$
Electricity	Solid salts don't conduct electricity	

Salt solutions and its molten are good conductors of electricity.

The salinity of dead sea is **10 times** higher than that of the red sea, and therefore its density **increase** (no object can sink in it)

7. The opposite figure illustrates the composition of the bronze alloy:

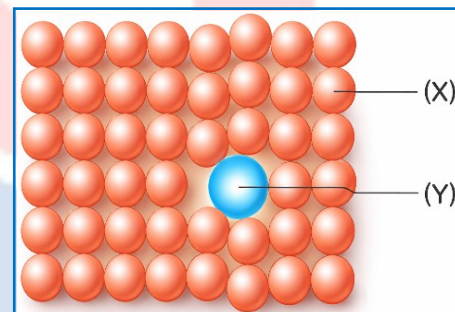
(1) What are the elements (X) and (Y)?

➤ **Element (X): Copper.**

➤ **Element (Y): Tin.**

(2) Why are alloys preferred to be used more than the pure metals?

Because alloys are harder than pure metals, which tend to be soft and often unfit for the industrial uses and resistance to rust.



8. The table below shows the properties of 3 elements (a metal, a nonmetal and a metalloid) without order:

Element		Properties		
(X)	Solid at room temperature.	Shiny.	Brittle.	Heat conductor.
(Y)	Solid at room temperature.	Shiny.	Soft.	Electrical conductor.
(Z)	Solid at room temperature.	Opaque.	Brittle.	Bad electrical conductor

Identify the metal and the nonmetal of these elements, with explanation.

✓ **Element (Y): Metal, as its properties are of those of metals.**

✓ **Element (Z): Nonmetal, as its properties are of those of nonmetals.**

9. Can the type of potassium hydroxide solution be identified by using the blue litmus strip? Explain.

No / Because potassium hydroxide solution is an alkaline solution that does not change the colour of blue litmus strip.

10. Element (X) oxide has the following properties:

- ❖ It can react with acids.
- ❖ It does not react with alkalis.

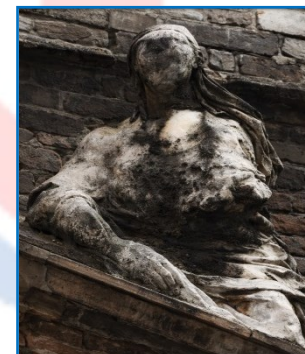
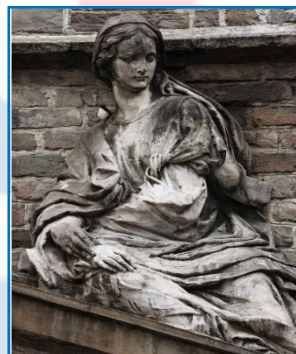
Is element (X) sulphur or copper? Explain.

Element (X) is copper / Because copper oxide is a basic oxide that reacts with acids and does not react with alkalis.

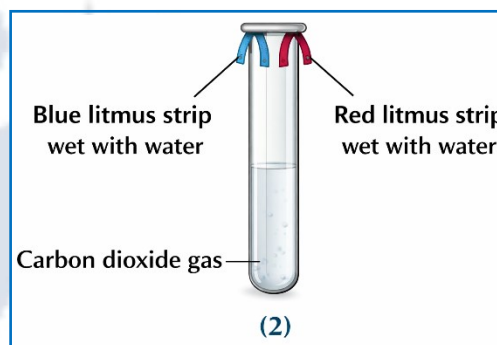
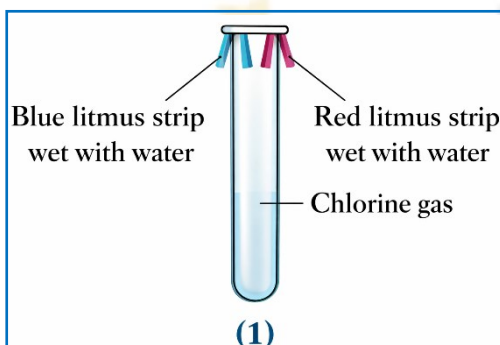
11. The opposite figures show the same statue left in open air for nearly 100 years :

Why did the details of the statue disappear according to what you have studied?

Due to acid rains which result from the dissolution of acidic oxides in atmospheric water vapour.



12. What happens to the colours of the litmus strips in the following cases?



- ❖ In case of tube (1): Chlorine gas removes the colour of the two litmus strips.
- ❖ In case of tube (2): The blue litmus strip turns red.

13. Acidity of the soil varies from one place to another:

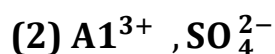
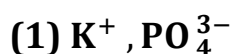
(1) How can acidic soil be treated?

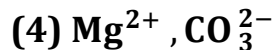
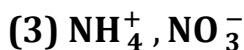
Acidic soil is treated by adding basic substances to it, such as calcium hydroxide Ca(OH)_2

(2) What is the colour of Hydrangea flowers which grow in acidic soil?

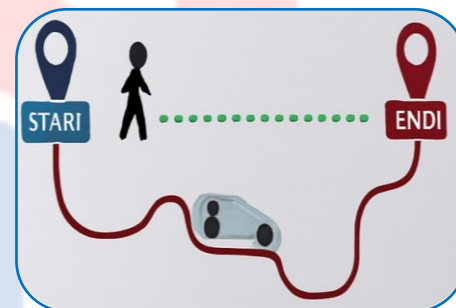
The flowers acquire blue colour.

22. Write the molecular formulas of the salts composed from the following cations and anions:



**Answers:****Unit 2****14. Distance or Displacement :**

- The path taken by the car represents **distance**
- The path taken by the person represents **displacement**
- The measuring unit for the physical quantity represented by the path of the car is **m, cm or km**

**15. Complete the figure :**

- Speed is defined as **the distance covered per unit time**

Speed is measured in units of **m/s or km/h**

- Calculate the speed of an object that covers distance of 10m in a time of 5s.

$$\text{Speed} = \text{distances} \div \text{time} = 10/5 = 2 \text{ m/s}$$

- When is the distance covered equal to the displacement ?

if move in straight line in one direction

- When is the speed equal to the distance covered ? **if time equal 1 second**

16. Look at the two pictures.

- Which one shows work being done?

(Explain your answer.)

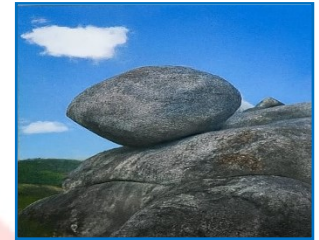
**2****1**

Figure 1 /because the wheelbarrow move in same direction of force

- Work is **the amount of energy required to move an object through a certain displacement in the same direction of the force which acts on it.** and is symbolized

by **W** and its measuring unit is **joule**

- The work mathematical relationship = **force** ✗ **displacement**
- Energy is **The ability to do work.** and its measuring unit is **joule**
- What are the similarities between the static rock on top of the hill and the static ball on the playground?



The static rock and static ball Both are at rest

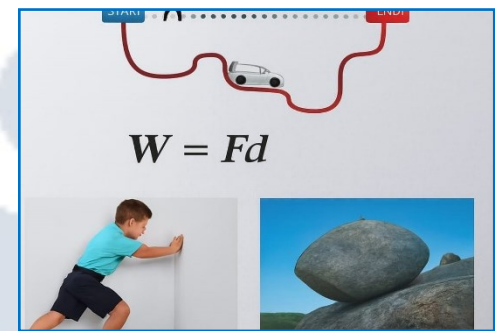
17. From the forms of the potential energy:

- 1- **Gravitational** potential energy like **a rock on top of a hill / a ball held at a height**
- 2- **Elastic** potential energy like **a compressed spring / a stretched rubber**
- 3- **Chemical** potential energy like **food / fuel / batteries**

18. Explain why the potential energy differs in the two cases shown in the figure.

The potential energy differs because the height of the ball is different in the two cases.

- **The ball held at a greater height has higher potential energy**
- **The ball held at a lower height has lower potential energy**



19. The value of potential energy can be obtained from the mathematical relationship

$$P.E = m \times g \times h$$

20. What happens when the weight of the ball increases?

the potential energy increases



حمل الآن

مجانا وحصريا

المراجعة رقم (4)

اختبار شهر مارس





March Revision

Mr. Ahmed Elbasha

★ **(1) Write the scientific term:**

- 1) Elements that have metallic luster and are good conductors of heat and electricity. (.....)
- 2) A nonmetallic element that is a good conductor of electricity. (.....)
- 3) The attraction force between positive metal ions and the negative valence electron cloud which surrounds them. (.....)
- 4) A mixture composed of the melts of two metals or more. (.....)
- 5) An ion composed of more than one atom of more than one element. (.....)
- 6) A substance whose dissolution in water leads to an increase in the percentage of H^+ cations in the solution. (.....)
- 7) A substance whose dissolution in water leads to an increase in the percentage of OH^- anions in the solution. (.....)
- 8) Metal oxides, some of which dissolve in water forming alkalis. (.....)
- 9) Nonmetal oxides that dissolve in water forming acids. (.....)
- 10) Rains which result from the dissolution of acidic oxides in the atmospheric water vapor. (.....)
- 11) Chemical substances whose colour differs in acidic medium from that in alkaline medium. (.....)
- 12) An indicator that can differentiate between the different acids or the different alkalis according to their strength. (.....)
- 13) A scale ranging between the values 0 to 14, and used to determine the acidity and the basicity of solutions. (.....)
- 14) A device used to measure the pH value of solutions directly and accurately. (.....)
- 15) Compounds, mostly ionic, formed from the combination of an alkali cation with an acid anion. (.....)

- 16) The energy acquired by an object as a result of its motion. (.....)
-
- 17) The sum of the potential and the kinetic energies of any moving object. (.....)
-
- 18) The total length of any path taken by the object during its moving from the starting point to the end point. (.....)
-
- 19) The shortest straight path connecting between the starting point and the end point in a constant direction. (.....)
-
- 20) The distance covered per unit time. (.....)
-
- 21) The ability to do work. (.....)
-
- 22) The energy stored in the object as a result of the work done on it. (.....)
-
- 23) The product of multiplying the mass of the object and the Earth's gravitational field intensity. (.....)
-

***(2) Choose the right answer:**

1. What is the similarity between metals and nonmetals ?

- a. They do not have metallic luster.
- b. They are good conductors of heat.
- c. They are malleable, ductile and formable.
- d. The last energy level in their atoms is not filled with electrons.

2. All the following are properties of graphite, except that it

- a. is brittle.
- b. is a bad electrical conductor nonmetal.
- c. is black in colour.
- d. does not have metallic luster.

3. The liquid element that has metallic luster is

- a. mercury.
- b. bromine.
- c. lithium.
- d. chlorine.

4. The bronze alloy is formed by adding a small percentage of metal (X) to metal (Y). Which of the following identifies the metals (X) and (Y)?

- a. (X): Copper, (Y): Tin.
- b. (X): Copper, (Y): Sulphur.
- c. (X): Sulphur, (Y): Copper.
- d. (X): Tin , (Y): Copper.

5. Which of the following is the correct arrangement of the hardness of sodium $_{11}\text{Na}$, magnesium $_{12}\text{Mg}$ and aluminum $_{13}\text{Al}$?

- a. $\text{Na} > \text{Mg} > \text{Al}$
- b. $\text{Al} > \text{Mg} > \text{Na}$
- c. $\text{Mg} > \text{Na} > \text{Al}$
- d. $\text{Al} > \text{Na} > \text{Mg}$

6. The last energy level of metal atoms contains

- a. 1 : 3 electrons.
- b. 3 : 5 electrons.
- c. 5 : 7 electrons.
- d. 8 electrons.

7. Which of the following represents pure silver element ?

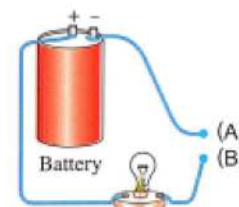
- a. Soft, conducts heat, opaque.
- b. Conducts heat, has metallic luster, brittle.
- c. Soft, conducts heat, has metallic luster.
- d. Conducts electricity, opaque, brittle.

8. The liquid element which is bad conductor of heat and electricity is

- a. bromine.
- b. chlorine.
- c. mercury.
- d. lithium.

9. In the opposite electrical circuit : Which of the following substances, when connected to the points (A) and (B), will light the bulb?

- a. Graphite and sulphur.
- b. Sulphur and copper.
- c. Graphite and aluminum.
- d. Graphite and bromine.



10. The hardest element of the following is

- a. $_{13}\text{Al}$
- b. $_{17}\text{Cl}$
- c. $_{12}\text{Mg}$
- d. $_{11}\text{Na}$

11. Copper is a component of the bronze alloy, its percentage is

- a. 5%
- b. 15%
- c. 65%
- d. 95%

12. Which of the following atomic groups carries the same charge as hydroxide group?

- a. Ammonium.
- b. Nitrate.
- c. Sulphate.
- d. Phosphate.

13. The combination of hydrogen with each of the following nonmetals produces acids, except

- a. chlorine. b. bromine. c. oxygen. d. iodine.

14. Element (X) forms the oxide XO which reacts with acids. Which of the following represents (X) and XO ?

- a. (X): Metal, XO: Acidic oxide. b. (X): Nonmetal, XO: Acidic oxide.
c. (X): Metal, XO: Basic oxide. d. (X): Nonmetal, XO: Basic oxide.

15. On dissolving calcium oxide in water, and placing two litmus strips in the solution, the colour of one of them changes into

- a. red. b. purple. c. blue. d. yellow.

16. All the molecular formulas of the following ions are correct, except

- a. sulphate SO_4^{2-} b. phosphate PO_4^{3-}
c. hydride OH^- d. nitrite NO_2^-

17. The molecular formula of hydrochloric acid is

- a. HCl b. HClO c. HClO_2 d. HClO_3

18. The correct name of H_2SO_4 acid is

- a. sulphuric acid. b. hypochloric acid.
c. sulphurous acid. d. hypochlorous acid.

19. Acids can contain the following atomic groups, except

- a. carbonate group. b. sulphate group.
c. nitrate group. d. hydroxide group.

20. Which of the following substances are acids ?

- a. Lemon and baking soda. b. Ketchup and grapes.
c. Soap and toothpaste. d. Detergents and ketchup.

21. The ion which is responsible for the acidic properties is

- a. NH^+ b. O_2^- c. H^+ d. OH^-

22. Each of the following expresses the solution of HI acid, except

- a. gas dissolved in water. b. it turns blue litmus strip to red.
c. it reacts with HCl acid. d. it contains H^+ ions.

23. Dissolving sulphuric acid H_2SO_4 in water produces

- a. H^+ cations and SO_3^{2-} anions. b. H^+ cations and $\text{S}_2\text{O}_3^{2-}$ anions.
c. H^+ cations and S^{2-} anions. d. H^+ cations and SO_4^{2-} anions.

24. All the following acids are strong, except

- a. nitric acid. b. acetic acid.
c. sulphuric acid. d. hydrochloric acid.

25. The compound which is used in antacids is

- a. MgCl_2 b. $\text{Mg}(\text{OH})_2$ c. H_2CO_3 d. NaO_2

26. Among the basic oxides is

- a. SO_2 b. SO_3 c. NaO_2 d. Na_2O

27. All the following are properties of alkalis, except

- a. they contain OH^- ions.
b. they turn red litmus strip to blue.
c. they can react with sodium hydroxide solution.
d. they can react with hydrochloric acid solution.

28. When hydrochloric acid HCl reacts with sodium hydroxide NaOH , the formed salt is

- a. NaCl_2 b. H_2O c. Na_2O d. NaCl

29. pH value of a solution is changed from 8 to 5, that means it was

- a. acidic and becomes alkaline. b. acidic and becomes neutral.
c. alkaline and becomes neutral. d. alkaline and becomes acidic.

30. Among the basic gases is

- a. NH_3 b. O_2 c. H_2 d. CO_2

31. On dissolving CO_2 gas in water, a solution is formed that changes the colour of the universal indicator strip. What is the type of the formed solution, What is the ion which causes the colour change in the indicator?

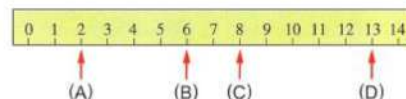
- a. Acidic, OH^- b. Alkaline, OH^-
c. Acidic, H^+ d. Alkaline, H^+

32. The solution with pH equals 1 is

- a. strong alkali. b. weak alkali.
c. strong acid. d. weak acid.

33. The opposite figure shows the pH values of four different solutions. The strongest alkali is

- a. (A). b. (B).
c. (C). d. (D).



34. pH of acid rains can be equals

- a. 5 b. 7 c. 9 d. 11

35. Which of the following substances are acidic ?

- a. Bleach and hand soap. b. Bananas and tomatoes.
c. Milk and eggs. d. Lemon and baking soda.

36. The following substances have pH greater than 7, except

- a. oven cleaners. b. calcium hydroxide solution.
c. ammonia solution. d. grape juice.

37. The combination of Mg^{+2} cation with CO_3^{2-} anion, forms

- a. an acid. b. an alkali. c. an oxide. d. a salt.

38. Ca^{2+} ions combine with PO_4^{3-} ions forming a salt its molecular formula is

- a. CaPO_4 b. $\text{Ca}_2(\text{PO}_4)_3$
c. $\text{Ca}(\text{PO}_4)_2$ d. $\text{Ca}_3(\text{PO}_4)_2$

39. The correct name of the compound $(\text{NH}_4)_3\text{PO}_4$ is

- a. ammonium phosphide. b. ammonium phosphate.
c. nitrogen phosphide. d. nitrogen phosphate.

40. Which of the following substances dissolves in water, producing a solution its pH is less than 7?

- a. Calcium carbonate. b. Sodium carbonate.
c. Silver chloride. d. Ammonium chloride.

41. The potential energy of an object depends on

- a. its weight and speed. b. its weight and mass.
c. its speed and height. d. its weight and height

42. Each of the following is a unit of measuring distance, except

- a. cm b. km c. kg d. m

43. When an object moves over a distance of 20 m in a straight line in a constant direction its displacement equals

- a. zero b. 20 m c. 40 m d. 80m

44. A car travels over a distance (d) in time (t). What is the formula used to calculate the speed (v) of this car?

- a. $V = d \times t$ b. $V = \frac{t}{d}$
c. $V = \frac{1}{2} \times d \times t^2$ d. $V = \frac{d}{t}$

45. What is the amount of work done by a student pushing the wall of his room with a force of 500 N?

- a. zero. b. 2251 c. 5001 d. 10001

46. What is the quantity which has the same unit of measurement as force?

- a. Energy. b. Displacement. c. Speed. d. Weight.

47. The potential energy of an object increases when

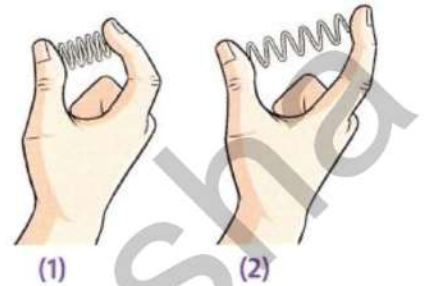
- a. its speed increases. b. its weight increases.
c. its height decreases. d. its weight decreases.

48. When the height of the object above the surface of the ground is doubled,

- a. its potential energy decreases to quarter.
- b. its potential energy remains constant.
- c. its potential energy increases to double.
- d. its potential energy decreases to half.

49. From the opposite figure. Which spring stores greater amount of energy?

- a. (1) / Because the work done on it is greater.
- b. (1) / Because the work done on it is less.
- c. (2) / Because the work done on it is greater.
- d. (2) / Because the work done on it is less.



50. The opposite figure shows three positions in the path of a moving car. Which of the following expresses the change in the car's potential energy when moving from X to Y and from Y to Z respectively ?

- a. Increases, increases.
- b. Increases, remains unchanged.
- c. Remains unchanged, increases.
- d. Remains unchanged, remains unchanged.



51. The kinetic energy of an object depends on

- a. the weight of the object and its height.
- b. the mass of the object and its speed.
- c. the gravitational field intensity and the speed.
- d. distance and time.

52. The kinetic energy of any moving object is determined by the mathematical relation

- a. mgh
- b. $\frac{1}{4}mv^2$
- c. $\frac{d}{t}$
- d. $\frac{1}{2}mv^2$

53. At the maximum height reached by an object thrown upwards,

- a. potential energy is zero.
- b. kinetic energy is zero.
- c. mechanical energy is zero.
- d. the mass of the object is zero.

*** (3) Put ($\checkmark$) or (X) :**

1. Lithium and sulphur can be differentiated by electrical conductivity. ()
2. Sodium is a soft metal with a melting point lower than that of nonmetals. ()
3. Sulphur is used in dry cells. ()
4. Bromine is a liquid element with metallic luster. ()
5. Pure gold metal is harder than gold alloys. ()
6. Symbol of aluminum cation is Al^{+3} , while formula of ammonium group is NH_4^{3-} . ()
7. The molecular formula of nitric acid is HNO_3 , while the molecular formula of sulphuric acid is H_2S . ()
8. When lithium hydroxide dissolves in water, the percentage of OH^- cations in the solution increases. ()
9. Milk of magnesia contains MgO . ()
10. Sulphur oxides dissolve in atmospheric water vapour, forming basic rains that cause the corrosion of buildings. ()
11. The number of H^+ ions equals the number of OH^- ions in distilled water. ()
12. Acidic soil is treated with adding basic substances to it such as HCl . ()
13. The strength of the acidic solution increases as its pH value approaches 14. ()
14. CuSO_4 salt is green in colour and dissolves in water. ()
15. Sodium carbonate salt Na_2CO_3 dissolves in water, forming a solution its pH value is 7. ()
16. The product of the speed of the object multiplied by the time equals the work. ()
17. When a robot exerts a force of 10 N on 2 bricks to lift them vertically for 3 m, it performs work equals 40 J. ()
18. The unit of measurement for kinetic energy is Newton. ()
19. The kinetic energy of an object at rest equals zero. ()
20. The kinetic energy of an object is doubled when its speed is doubled. ()
21. During the vertical throwing of an object, its potential energy increases while its kinetic energy decreases. ()
22. The speed of a pendulum ball is zero when it passes through the original position. ()

***(4) Complete the following:**

1. The elements are bad conductors of heat and electricity, except which is a good conductor of electricity.
2. are characterized by being ductile, malleable and formable, while are characterized by being brittle (not ductile or malleable or formable).
3. As the number of valence electrons of the metal atom increase, the strength of its metallic bond
4. group has a positive charge.
5. The molecular formula of an acid begins with the symbol of cation, while the molecular formula of an alkali ends with the symbol of anion.
6. Hydrobromic acid is composed of cation and anion.
7. Lemon is, while the grease cleaner is
8. When acids dissolve in water, the percentage of cations in the solution increases, while when alkalis dissolve in water, the percentage of anions increases.
9. is a strong alkali, while is a weak acid.
10. Oxides are divided into oxides and oxides.
11. The dissolution of oxides in water forms acids, while the dissolution of oxides in water forms alkalis.
12. When an acid reacts with an alkali, and are produced.
13. Carbon dioxide gas changes the colour of the litmus strip to colour.
14. The strength of the alkaline solution increases as the pH value approaches, while the strength of the acidic solution increases as the pH value approaches
15. A change in the pH value of a solution from 3 to 7 means that it was and become
16. The name of any salt begins with the name of the followed by the name of the which forms it.
17. The molecular formula of nickel chloride salt is
18. Unit of measurement of the speed of an object is or
19. If a force of 200 N acts on a car and does not move it from its position, the work done on it equals

20. The potential energy of an object = x and its unit of measurement is
21. The potential energy of an object depends on and
22. The mass is estimated in, while the weight is estimated in
23. The kinetic energy of an object increases with increasing either or
24. When a ball falls vertically downwards, the potential energy and the kinetic energy

***(5) Give reasons for:**

1. The melting point of magnesium is higher than that of sodium.
.....
2. Magnesium $_{12}\text{Mg}$ is a metallic element, while sulphur $_{16}\text{S}$ is a nonmetallic element.
.....
3. Graphite is used in dry cells despite being a nonmetal.
.....
4. Aluminum $_{13}\text{Al}$ is harder and has a higher melting point than sodium $_{11}\text{Na}$
.....
5. Alloys are preferred to use in industry instead of pure metals.
.....
6. The bronze alloy is used in jewelry and statues instead of copper metal.
.....
7. The total charge of the molecule of any compound equals zero.
.....
8. It is possible to distinguish between acids and alkalis by using litmus strips.
.....
9. A person pushing against a wall does not perform work.
.....
10. The role of fuel within a car is similar to the role of food within a living organism.
.....
11. The kinetic energy of a truck is greater than the kinetic energy of a car when their speeds are equal.
.....
12. The kinetic energy of an object cannot exceed its mechanical energy.
.....
13. The High Dam has great importance in generating electrical energy in Egypt.
.....

*** (6) What happens when:**

1. A piece of sulphur is hammered.
.....
2. The number of valence electrons in metal atoms increases "In order to: Their melting points".
.....
3. A metal melt is added to another metal melt.
.....
4. Calcium hydroxide Ca(OH)_2 dissolves in water.
.....
5. Hydrogen chloride gas HCl dissolves in water.
.....
6. A red litmus strip is placed in a beaker containing sodium hydroxide solution.
.....
7. Magnesium burns in the presence of oxygen, then the product dissolves in water.
.....
8. Sulphur burns in the presence of oxygen, then the product dissolves in water.
.....
9. Acids react with alkalis.
.....
10. Fossil fuels burn in factories and cars.
.....
11. Sulphur and nitrogen oxides dissolve in the water of the rains.
.....
12. Exerting a suitable force on a stationary object (an object at rest).
.....
13. The weight of the object is doubled with constant height
"Regarding its potential energy"
.....
14. The vertical distance that the object is lifted above the ground decreases to half with constant mass
"Regarding its potential energy".

.....
15. The mass of a moving object decreases to half while its speed remains constant

"Regarding kinetic energy".
.....

16. The speed of a moving object is doubled while its mass remains constant

"Regarding kinetic energy".
.....

17. The pendulum ball is drawn upwards from its original position.

"Regarding the speed of the ball".
.....

18. The pendulum ball reaches its highest point during its motion

"Regarding its kinetic and potential energies."
.....

19. The pendulum ball passes through the original position during its motion

"Regarding its kinetic and potential energies."
.....

20. The free falling of an object from a height

"Regarding its potential and kinetic energies."
.....

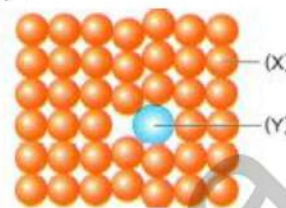
*(7) Problems:

1 Study the following figures, then answer the questions:

1. The opposite figure illustrates the composition of the bronze alloy:

(1) What are the elements (X) and (Y) ?

(2) Why are alloys preferred to be used more than the pure metals ?



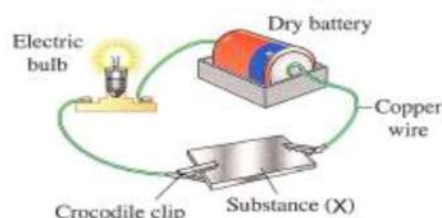
2 Cross out the odd out:

1. Magnesium / Copper/ Mercury/ Silver.
2. Hydrochloric acid / Acetic acid / Carbon dioxide gas /Ammonia gas.
3. H_2 / Cl_2 / O_2 / N_2
4. Sodium hydroxide / Baking soda /Vinegar/ Hand soap.
5. HBr / H_2O / H_2CO_3 / HNO_3
6. Lemon / Baking soda / Ketchup / Grapes.
7. HNO_3 / HBr / $NaOH$ / H_2SO_4
8. $Ca(OH)_2$ / CO_2 / KOH / $Mg(OH)_2$

3 In the opposite figure:

What happens to illuminate the bulb, with explanation when the substance (X) is replaced with each of the following :

- (1) A piece of graphite.
- (2) A piece of sulphur.



4 Write the molecular formulas of the salts composed of the cations and anions:

- | | |
|-----------------------------------|-----------------------------------|
| (1) K^+ , PO_4^{3-} | (2) Al^{3+} , SO_4^{2-} |
| (3) NH_4^+ , NO_3^- | (4) Mg^{2+} , CO_3^{2-} |
| (5) Na^+ , Cl^- | (6) Ba^{2+} , CO_3^{2-} |
| (7) NH_4^+ , Cl^- | (8) NH_4^+ , PO_4^{3-} |
| (9) Mg^{2+} , SO_4^{2-} | (10) Ag^+ , Cl^- |

5 Study the following figures, then answer the questions:

From the two opposite figures :

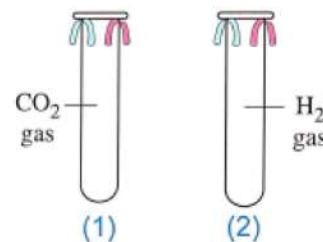
(1) What happens to the litmus strips wetted with water in tube (1) ?

What can be concluded from that ?

(2) What is the effect of H_2 gas on the wetted litmus strips in tube (2)?

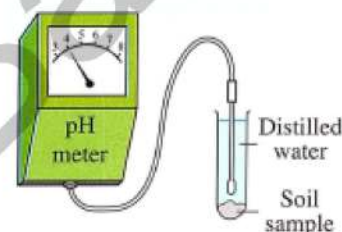
State the names of two other gases that have the same effect.

(3) What happens when H_2 gas in tube (2) is replaced with chlorine gas Cl_2 ?

**6 The device illustrated in the opposite figure is used to measure the acidity or basicity of agricultural soil :**

1. What is the type of this soil? Explain.

2. How can this soil be treated ?

**7 The following figures illustrate the ions of some elements and atomic groups:**

Write the name and the molecular formula of the salt resulting from the combination of:

1. Ion (1) with Ion (5).

2. Ion (3) with Ion (2).

3. Ion (6) with Ion (4).

8 Write the names of the following acids and alkalis :

1. H_2CO_3

2. HF

3. $Mg(OH)_2$

4. $LiOH$

5. H_2SO_4

6. NH_4OH

9 Give one example for each of the following :

1. A negatively charged atomic group.
2. A strong acid.
3. An atomic group with a charge of -2
4. An oxyacid.
5. A weak acid.
6. A strong alkali.

10 Write the chemical formula for each of the following:

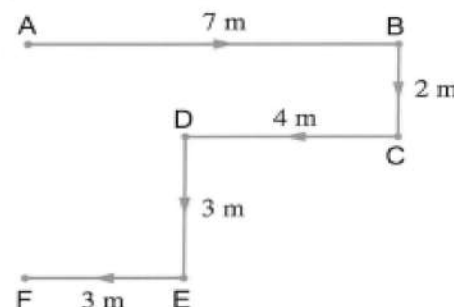
1. Hydrobromic acid.
2. Nitric acid.
3. Lithium hydroxide.
4. Carbonic acid.
5. Sodium hydroxide.

11. Study the following figures, then answer the questions :

The opposite figure illustrates the path taken by an object from point (A) to point (F) in a time of 3 sec **Calculate:**

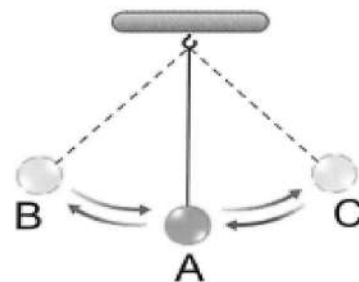
a. The total distance.

b. The displacement.

**12. The figure illustrates the motion of a simple pendulum:**

Identify the position(s) at which:

- 1- The kinetic energy is at its maximum.
- 2- The potential energy equals zero.
- 3- The potential energy is at its maximum.
- 4- The speed of the pendulum ball equals zero.



★ **(8) Choose from column (B) what suits it in column (A) :**

1.

(A) Physical quantity	(B) Applicable law
1. Potential energy	a. Force $\times$ Displacement
2. Speed	b. Mass of the object $\times$ Gravitational field intensity
3. Work	c. Weight of the object $\times$ Height
4. Weight	d. Mass of the object $\times$ Height.
	e. Distance $\div$ Time

1. 2. 3. 4.

2.

(A) Physical quantity	(B) Unit of measurement
1. Energy	c. kg
2. Mass	d. J
3. Weight	e. m
4. Height	f. m/s
5. Speed	g. N

1. 2. 3. 4. 5.

Model Answer

*(1) Write the scientific term:

1. Metals	7. Alkali	12. Universal indicator	17. Mechanical energy	22. Potential energy
2. Graphite	8. Basic oxide	13. pH	18. Distance	23. Weight
3. Metallic bond	9. Acidic oxide	14. pH meter	19. Displacement	
4. Alloy	10. Acidic rains	15. salt	20. Speed	
5. Atomic group	11. Indicator	16. Kinetic energy	21. Energy	
6. Acids				

*(2) Choose the right answer:

1. d	11. d	21. c	31. c	41. D	50. B
2. b	12. b	22. c	32. c	42. C	51. B
3. a	13. c	23. d	33. d	43. B	52. D
4. d	14. c	24. b	34. a	44. D	53. B
5. b	15. c	25. b	35. b	45. A	
6. a	16. c	26. d	36. d	46. D	
7. c	17. a	27. c	37. d	47. B	
8. a	18. a	28. d	38. d	48. C	
9. c	19. d	29. d	39. b	49. A	
10. a	20. b	30. a	40. d		

*(3) Put (✓) or (X) :

1. (✓)	6. (X)	11. (✓)	16. (X)	20. (X)
2. (X)	7. (X)	12. (X)	17. (X)	21. (✓)
3. (X)	8. (✓)	13. (X)	18. (X)	22. (X)
4. (X)	9. (X)	14. (X)	19. (✓)	
5. (X)	10. (X)	15. (X)		

*(4) Complete the following:

1. Nonmetal - graphite	6. $H^+ - Br^-$	10. Acidic - basic	13. Blue - red	18. m/s or Km/h	22. Kg - N
2. Metals - nonmetals	7. Acid - alkali	11. Nonmetal (acidic) - metallic (basic)	14. 14 - 0	19. zero	23. Mass - speed
3. Increase	8. $H^+ - OH^-$	12. Salt - water	15. Acid - neutral	20. $w \times h$ - joule	24. Decrease - increase
4. Ammonium	9. Sodium hydroxide - acetic acid		16. Cation - anion	21. weight and height	
5. $H^+ - OH^-$			17. $NiCl_2$		

*(5) Give reasons for:

- Because As the number of valence electrons in the metal atom increases, the strength of its metallic bond also increases and melting point increase.
- Because ^{12}Mg contain two electrons in the outermost energy level , while ^{16}S contain six electrons in outermost energy level.
- Graphite is the only good electrical conductor nonmetal.
- Because As the number of valence electrons in the metal atom increases, the strength of its metallic bond also increases and hardness increase.
- Because alloy is harder than pure metals.
- Because bronze alloy is more resistant to rusting.
- Because The number of hydroxide groups in the alkali molecule **equals** the magnitude of the charge of the cation (or the atomic group) that composes it.
- Because acid turns blue litmus paper into red , and alkalis turns red litmus paper into blue.
- Because the displacement is equal to zero.
- Because the chemical energy found in food and fuel is potential energy stored in chemical bonds and converted into kinetic energy.
- Because the mass of the truck is greater than the mass of a car and as the kinetic energy increases, its mass increases.
- Because the mechanical energy is sum of potential and kinetic energy.
- Because the potential energy of the water held behind the dam is converted into kinetic energy then to electric energy.

***(6) What happens when:**

1. The piece of sulphur crumbles easily
2. The melting point will increase
3. It will form alloy
4. It forms alkaline solution
5. It forms acidic solution
6. The red litmus strip changes into blue
7. It forms magnesium oxide (Basic oxide) which dissolves in water and form alkaline solution.
8. It forms Sulphur oxide (acidic oxide) which dissolves in water and form acidic solution.
9. It will form salt and water.
10. It produces acidic gases such as NO₂ and SO₂ which dissolve in water vapour and form acidic rains.
11. It forms acidic rains.
12. The object will move.
13. The potential energy doubles.
14. The potential energy decreases to half.
15. The kinetic energy of the object decreases to half.
16. The kinetic energy of the object increases to four times its value.
17. Its speed decreases
18. Its kinetic energy becomes zero and its potential energy is at its maximum.
19. Its kinetic energy is at its maximum.
20. The potential energy decreases gradually and the kinetic energy increases.

*(7) Problems:

1	(1) * Element (X): Copper. * Element (Y): Tin. (2) Because alloys are harder than pure metals, which tend to be soft and often unfit for industrial uses.	2	1. Mercury 2. Ammonia gas. 3. Cl_2 4. Vinegar 5. H_2O 6. Baking soda 7. NaOH 8. CO_2
3	(1) The bulb remains lit/ Because graphite is a good conductor of electricity. (2) The bulb goes out/ Because sulphur is a bad conductor of electricity.	4	1. K_3PO_4 2. $\text{Al}_2(\text{SO}_4)_3$ 3. NH_4NO_3 4. MgCO_3 5. NaCl 6. BaCO_3 7. NH_4Cl 8. $(\text{NH}_4)_3\text{PO}_4$ 9. MgSO_4 10. AgCl
5	(1) The blue litmus strip turns to red / This indicates that carbon dioxide gas has an acidic effect. (2) It does not affect the colours of the litmus strips / Oxygen gas (O_2), Nitrogen gas (N_2). (3) The colours of the litmus strips disappear.	6	1. acidic soil – because pH is less than 7 2. by adding alkaline substance.
7	(1) * Element ions: (1), (3), (5). * Atomic group ions: (2), (4), (6). (2) 1- Potassium chloride/ KCl 2- Calcium sulphate / CaSO_4 3- Ammonium carbonate / $(\text{NH}_4)_2\text{CO}_3$	8	1. Carbonic acid 2. Hydrofluoric acid 3. Magnesium hydroxide 4. Lithium hydroxide 5. Sulphuric acid 6. Ammonium hydroxide
9	1. OH^- 2. HCl 3. SO_4^{2-} 4. HNO_3 5. Acetic acid 6. Sodium hydroxide	10	1. HBr 2. HNO_3 3. LiOH 4. H_2CO_3 5. NaOH
11	a. = $7+2+4+3+3 = 19 \text{ m}$ b. = $2+3 = 5 \text{ m}$	12	1. A 2. A 3. B and C 4. B and C

*(8) Choose from column (B) what suits it in column (A) :

1. 1. c 2. e 3. a 4. c
2. 1. d 2. c 3. g 4. e 5. f

حمل الآن

مجاناً وحصرياً

المراجعة رقم (5)

اختبار شهر مارس



Q1: Complete the following sentences with suitable words:

1. Elements are classified according to their chemical properties into and non-metals and and inert gases.
2. The outer energy level of metals contains electrons, while in non-metals it contains electrons.
3. are brittle while are ductile.
4. Non-metals are bad conductors of except for graphite.
5. Most metals exist in a state at room temperature.
6. The only metal that exists in a liquid state at room temperature is
7. The bond between metal atoms is called
8. When metals burn in oxygen,
9. Metals are usually conductors of heat and electricity.
10. The outer energy level of metal atoms contains or or electrons.
11. All metals are solid except for, which is liquid.
12. Metals are characterized by metallic luster and to hammering and pulling.
13. is used in the manufacture of dry columns because it is a good conductor of electricity.
14. A metallic bond is the force of attraction between and
15. A homogeneous mixture consisting of two or more molten metals is called
16. is the process of converting waste into new usable materials.
17. Bronze alloy consists of 95% metal and at a ratio of 5%.



18. Examples of monovalent negative atomic groups are the and
19. Examples of divalent atomic groups are the and the group
20. The only positively charged atomic group is the group while the group is trivalent.
21. Acids are classified according to their strength into..... acids such as andacids such as
22. The number of hydrogen atoms in an acid is equal to the amount of it contains.
23. Our bodies contain some acids such as acid and acid.
24. Examples of alkalis are and
25. Alkalis do not react with each other, but they react with
26. Examples of alkalis found in the home are, toothpaste, and
27. The first person to identify acids and alkalis was the scientist
28. Examples of foods that contain acids are ketchup and
29. Acids litmus strip while alkalis litmus strip
30. A substance that dissolves in water and produces H^+ ions is called
31. A substance that dissolves in water and produces OH^- ions is called
32. When an acid reacts with a base, and are formed.
33. The ending of an oxyacid whose anion ends in (-ite) is



34. Strong alkalis have a pH value than 7.
35. Acid rain is produced by the dissolution of oxides in water vapor.
36. Examples of acidic oxides are and
37. The names of acids that do not contain oxygen begin with the word and the names of alkalis ends with the word
38. Oxides are formed when non-metals burn in the presence of oxygen.
39. Oxides are formed when metals burn in the presence of oxygen.
40. Examples of oxyacids are while examples of acids that do not contain oxygen are
41. Examples of strong alkalis are while examples of weak alkalis are
42. A substance that changes color depending on the medium is called
43. The litmus indicator turns in an acidic medium.
44. A neutral solution has a pH value of
45. The closer the pH value is to zero, the more the solution is.
46. The indicator that can distinguish between degrees of acidity and alkalinity is called
47. When metal oxide is dissolved in water, is formed. When non-metal oxide is dissolved in water, is formed.
48. The compounds resulting from the reaction of acid with base are called
49. The salt resulting from the reaction of hydrochloric acid with sodium hydroxide is
50. The alloy consisting of copper and tin is called



51. Adding other metals to pure metals improves their properties, and the result is called
52. Salts that dissolve in water form solutions that are conductors of electricity.
53. The substance used to neutralize soil acidity is
54. Acid rain is formed when gas dissolves in rain water.
55. The substance used to treat stomach acidity is
56. The salinity of the Dead Sea is due to the high concentration of in its water.
57. The set of points through which a body passes during its motion is known as
58. Distance is defined as traveled by a moving body from the starting point to thepoint
59. is defined as the shortest straight line between the starting point and the end point.
60. The distance traveled during a unit of time is defined as while the ability to perform work is called
61. Potential energy is the energy of a body as a result of exerted on it.
62. Work is the amount of energy required to move a body in the same direction as acting on it.
63. Energy is measured in units of and work is measured in units of
64. Mass is measured in units of and weight is measured in units of
65. The work done is directly proportional to and
66. Units of measurement for speed are and, and displacement is measured in units of



67. The outer energy level of metals contains less than electrons, while non-metals contain more than electrons.

68. Element (A) has two electrons in its outer energy level (M), so its type is, and element (B) has six electrons in its outer energy level (L), so its type is

69. All non-metals are poor conductors of electricity except which is a good conductor of electricity.

70. Non-metals exist in three states: solid such as, gaseous such as, and the only liquid is

71. The atoms of solid metals are arranged in a pattern known as

72. The metallic bond occurs as a result of the attraction force between positive metal ions and the surrounding negative cloud.

73. Bronze alloy is used in the manufacture of and

74. Bronze alloy is characterized by being more than copper and it is not for rusting.

75. The scientist explained that acids are substances that dissolve in water and give positive ions, while alkalis give negative ions when dissolved in water.

76. The molecular formula of acids begins with the positive cation and its name is associated with the name in its composition.

77. The total charge of any compound molecule is equal to

78. The stomach secretes acid which helps in

79. Lemon and ketchup are considered substances, while toothpaste and baking soda are substances.

80. When hydrochloric acid dissolves in water, it produces ions and ions.



81. When magnesium hydroxide dissolves in water, the following ions are formed and
82. Nitric acid is considered a acid, while nitrous acid and sulphurous acid are acids.
83. Metals burn in an oxygen atmosphere and form; most of them are known as oxides.
84. Non-metals burn in an oxygen atmosphere and form; most of them are known as oxides.
85. The dissolution of sulphur trioxide in water produces
86. Melting in water produces magnesium hydroxide
87. The combustion of fossil fuels produces oxides and
88. are chemicals that change colour in an acidic medium compared to a basic medium, such as
89. Distilled water has a neutral effect and does not change the colour of litmus, as the number of ions in is equal to the number of ions in
90. There is much evidence of acids and alkalis, such as sunflower indicator and
91. We reduce soil acidity by adding substances such as
92. The pH value of acids is 7, while in it is greater than 7.
93. The pH value of a solution of table salt (sodium chloride) is
94. The hydrogen number is accurately measured using
95. Acidic gases are and
96. Basic gases are and
97. Neutral gases on litmus paper are and
98. They are compounds that are produced from the reaction of acid with



99. salts formed due to the combination between of base and of acid.
100. Salt is formed by the union of a metal ion with except for the hydroxide group.
101. When naming a salt, we start with the name of the
102. Copper sulphate salt is in colour, while sodium chloride salt is white in colour.
103. Sodium chloride dissolves in water, while poorly soluble in water.
104. Sodium nitrate salt consists of an anion and a cation
105. salt consists of calcium cation and sulphate anion.
106. The salinity of is higher than that of Red Sea water by about times.
107. Ammonium chloride solution turns litmus paper while solution turns blue litmus paper.
108. The measuring unit of distance and displacement is
109. The measuring unit of speed is and
110. $\text{Speed} = \dots \div \dots$
111. The measuring unit of work is while the newton is the measuring unit of
112. $\text{Work} = \dots = \text{force} \times \text{displacement}$.
113. Factors affecting potential energy are and
114. The measuring unit of weight is
115. $\text{Potential energy} = \dots \times \dots \times \dots$
116. $5 \text{ km} = \dots \text{ m}$, and $3 \text{ kJ} = \dots \text{ J}$.
117. Hydrochloric acid (.....) reacts with sodium hydroxide (.....) and forms salt (NaCl) and (H_2O) or written (HOH).



Q2: How do you differentiate between?

1. Phosphorus and iron in terms of metallic luster, hammering and shaping, conduction of heat and electricity, and melting point.
2. Sodium and graphite in terms of metallic luster, and which of them is opaque.
3. Sulphur and copper in terms of malleability and ductility, and which one is brittle.
4. Silver and phosphorus in terms of electrical conductivity.
5. The bicarbonate group and the sulphate group in terms of the number of charges they carry and their molecular formula.
6. Sulphuric acid and calcium hydroxide in terms of the molecular formula.
7. Acidic oxides and basic oxides in terms of their definition and their reaction with water.
8. Sulphuric acid and sulphurous acid in terms of their molecular formula, strength, and weakness.
9. Distilled water and hydrochloric acid by two methods.
10. Oxygen gas (O_2) and carbon dioxide gas (CO_2).
11. Ammonia gas and nitrogen dioxide gas.
12. Magnesium chloride and ammonium nitrate in terms of cation, anion, and molecular formula.
13. Zinc sulphate and nickel chloride in terms of color and molecular formula.
14. Sodium carbonate and calcium carbonate in terms of solubility in water and molecular formula.
15. Ammonium chloride solution and sodium carbonate solution in terms of pH value, effect on litmus strips, and molecular formula.
16. Metals and non-metals in terms of their physical and chemical properties.



17. Acids and alkalis in terms of their effect on litmus strip.

18. Strong acids and weak acids.

19. Strong alkalis and weak alkalis.

Q3: What is meant by each of the following?

1. Metals.

2. Non-metals.

3. Metallic bond.

4. Alloys.

5. Recycling.

6. Atomic group.

7. Acids.

8. Bases.

9. Oxygen acids.

10. Strong acids.

11. Weak acids.

12. Oxides.

13. Acid rain.

14. Bronze alloy.

15. Acidic oxides.

16. Basic oxides.

17. pH.

18. Salts.

19. Path.

20. Distance.

21. Displacement.

22. Speed.

23. Energy.



24. Potential energy.
25. Work.
26. Chemical indicators.
27. Universal indicator.
28. pH meter.
29. Independent variable.
30. Dependent variable.

Q4: What are the benefits, harms, or most important functions of each of the following?

1. Graphite.
2. Bronze alloy.
3. The number of electrons in the outer shell of an atom.
4. Recycling of elements.
5. Hydrochloric acid in our bodies.
6. Lactic acid.
7. Litmus strips in the laboratory.
8. Magnesium milk.
9. Acid rain.
10. Sulfur and nitrogen oxides.
11. Acids in our lives.
12. Alkalis in our lives.
13. Acidic oxides.
14. Basic oxides.
15. Adding tin to copper.
16. Metallic bonding in the manufacture of electrical wires.
17. Adding calcium hydroxide to soil.
18. Recycling aluminum.
19. Universal indicator.



20. pH meter.
21. Scientist Soren Sorensen.
22. Scientist Arrhenius.

Q5: Give reason for each of the following:

1. Graphite is used to make the positive electrode of a dry cell battery.
2. Aluminum (13Al) is harder and has a higher melting point than sodium (11Na).
3. Metals are good conductors of electricity.
4. Graphite conducts electricity, unlike other non-metals.
5. A litmus strip is not suitable for distinguishing between strong and weak acids.
6. Bronze is more resistant to rust than pure copper.
7. Ammonium chloride solution is acidic.
8. Calcium is added to acidic soil.
9. Solid salts do not conduct electricity.
10. The color of hydrangea flowers changes depending on the type of soil.
11. Chemical indicators only work in the presence of water.
12. Magnesium hydroxide is used to treat stomach acidity.
13. Distilled water is neutral.
14. Fish do not live in the Dead Sea.
15. Some metallic elements are recycled.
16. Acid rain occurs.
17. Hydrochloric acid is used in the digestion of food.
18. Muscle tension occurs when there is a lack of oxygen in the muscles.
19. Copper is used in the manufacture of electrical wires.



20. Bronze alloy is used in the manufacture of statues, medals, and jewelry.
21. Most alloys are not expressed in molecular form.
22. Most countries currently resort to recycling strategies.
23. Hydrochloric acid is not an oxyacid.
24. Nitric acid is an oxyacid.
25. Acid rain has a harmful effect on the environment.
26. Hydrogen chloride is an acid, while sodium hydroxide is an alkali.

Q6: What happens when:

1. You hammer a piece of coal and a piece of iron.
2. You dip two litmus strips in a cup containing an acidic solution.
3. You dip two litmus strips in a cup containing an alkaline solution.
4. You dip two litmus strips in a cup containing distilled water.
5. An acid reacts with an alkali.
6. Lactic acid accumulates in muscles.
7. A metal burns in oxygen.
8. A non-metal burns in oxygen.
9. Sulfur and nitrogen oxides dissolve in water vapor in the atmosphere.
10. Acid rain falls in a certain area.
11. Body weight increases relative to its potential energy.
12. Distance traveled decreases during the same time.
13. A strong force acts on an object with zero displacement.

Q7: Give one example of each of the following:

1. Metals.
2. Non-metals.
3. Alloys.
4. Acids.



5. Bases.
6. Oxides.
7. Salts.
8. Positive atomic group.
9. Monovalent atomic group.
10. Divalent atomic group.
11. Trivalent atomic group.
12. Oxyacid.
13. Non-oxygenic acid.
14. An acid in your body.
15. An alkali.
16. Metallic oxide.
17. Non-metallic oxide.
18. An alkaline substance used as medicine.
19. A body that performs work.
20. A body that does not perform work.

Q8: Write the chemical formula for each of the following:

1. Sodium chloride.
2. Calcium hydroxide.
3. Aluminum sulfate.
4. Potassium nitrate.
5. Sodium carbonate.
6. Magnesium oxide.
7. Calcium phosphate.
8. Iron (III) chloride.
9. Hydrogen sulfide.
10. Ammonium hydroxide.



11. Sulfuric acid.
12. Nitric acid.
13. Hydrochloric acid.
14. Sulfur dioxide.
15. Nitrogen monoxide.
16. Silver nitrate.
17. Sodium sulfide.
18. Aluminum oxide.
19. Potassium hydroxide.
20. An atomic group consisting of three elements.
21. Nitrous acid.

Q9: Write the name represented by the following chemical formulas:

1. NaCl
2. Ca(OH)₂
3. Al₂(SO₄)₃
4. KNO₃
5. Na₂CO₃
6. MgO
7. Ca₃(PO₄)₂
8. H₂S
9. NH₄OH
10. H₂SO₄
11. HNO₃
12. HCl
13. SO₂
14. NO
15. AgNO₃



16. CuSO_4

17. Na_2S

18. NaHCO_3

19. Al_2O_3

20. MgSO_4

21. H_2CO_3 : write the name and state its type.

22. H_2S : write the name and state its type.

23. H_3PO_4 : write the name and state its type.

Q10: Miscellaneous questions:

1. What is the rule used to name acids that do not contain oxygen?

2. What is the rule used to name oxyacids whose anion names end with the suffix '-ate'?

3. What rule is used to name oxyacids whose anion names end with the suffix '-ite'?

4. What factors determine potential energy?

5. What is the relationship between work and both force and displacement?

6. What mathematical relationship is used to calculate velocity?

7. What mathematical relationship is used to calculate work?

8. What mathematical relationship is used to calculate potential energy given weight?

9. What mathematical relationship is used to calculate potential energy given mass?

10. What are the conditions for doing work?



Q11: Problems:

1. A train travels a distance of 200 km in 4 hours. What is the speed of the train?
2. An object with weight 20 N is at a height of 5 m above the ground. Calculate its potential energy.
3. A stone with a mass of 8 kg is placed at a height of 6 m. Calculate its potential energy. ($g = 10 \text{ m/s}^2$)
4. An apple with a mass of 200 g falls from a tree branch at a height of 5 m. Calculate the potential energy of the apple.
5. An object moves at a speed of 20 km/h. Calculate the distance traveled after 3 h.
6. An object exerts 50 J of work to move a wheel a distance of 10 m. Calculate the force required.
7. An object has a potential energy of 240 J at a height of 12 m. Calculate its weight.



Q1: Complete the following sentences with suitable words:

1-Elements are classified according to their chemical properties into..... and non-metals and..... and inert gases.

Answer: metals; metalloids

2- The outer energy level of metals contains electrons, while in non- metals it contains electrons.

Answer: 1, 2 or 3; 5, 6 or 7

3- are brittle whileare ductile.

Answer: Non-metals; metals

4- Non-metals are bad conductors of..... except for graphite.

Answer: electricity

5- Most metals exist in a..... state at room temperature.

Answer: solid

6- The only metal that exists in a liquid state at room temperature is.....

Answer: mercury

7- The bond between metal atoms is called

Answer: metallic bond

8- When metals burn in oxygen,.....

Answer: metal oxides are formed

9- Metals are usually..... conductors of heat and electricity.

Answer: good

10- The outer energy level of metal atoms containsor.....Or..... electrons.

Answer: 1 or 2 or 3

11- All metals are solid except for....., which is liquid.

Answer: mercury

12- Metals are characterized by metallic Luster and.....,to hammering and pulling.

Answer: malleable and ductile



13-..... is used in the manufacture of dry columns because it is a good conductor of electricity.

Answer: Graphite

14- A metallic bond is the force of attraction between.....and.....

Answer: positive metal ions (cations); the negative valence-electron cloud

15- A homogeneous mixture consisting of two or more molten metals is called.....

Answer: an alloy

16-.....is the process of converting waste into new usable materials.

Answer: Recycling

17- Bronze alloy consists of 95%..... metal and..... at a ratio of 5%.

Answer: copper; tin

18- Examples of monovalent negative atomic groups are the..... and.....

Answer: hydroxide group (OH-); nitrate group (NO₃-)

19- Examples of divalent atomic groups are the..... and the group.....

Answer: carbonate group (CO₃-2); sulphate group (SO₄-2)

20- The only positively charged atomic group is the group..... while the group.....is trivalent.

Answer: ammonium group (NH₄+); phosphate group (PO₄-3)

21-Acids are classified according to their strength into..... acids such asand..... acids such as

Answer: strong acids such as hydrochloric acid; weak acids such as sulphurous acid



22- The number of hydrogen atoms in an acid is equal to the amount ofit contains.

Answer: magnitude of the charge of the anion

23- Our bodies contain some acids such asacid andacid.

Answer: hydrochloric acid; lactic acid

24- Examples of alkalis areand.....

Answer: sodium hydroxide; calcium hydroxide

25- Alkalis do not react with each other, but they react with.....

Answer: acids

26- Examples of alkalis found in the home are, toothpaste, and

Answer: soap; baking soda

27- The first person to identify acids and alkalis was the scientist.....

Answer: Arrhenius

28- Examples of foods that contain acids areketchup and.....

Answer: lemon; vinegar

29-Acidslitmus stripwhile alkalis..... litmus strip.....

Answer: turn blue litmus strip red; turn red litmus strip blue

30-A substance that dissolves in water and produces H^+ ions is called.....

Answer: an acid

31-A substance that dissolves in water and produces OH^- ions is called.....

Answer: an alkali (base)

32- When an acid reacts with a base,and..... are formed.

Answer: salt; water



33- The ending of an oxyacid whose anion ends in (-ite) is.....

Answer: ous

34- Strong alkalis have a pH value..... than 7.

Answer: greater

35- Acid rain is produced by the dissolution of oxides..... in water vapor.

Answer: of sulfur and nitrogen

36- Examples of acidic oxides are.....and.....

Answer: carbon dioxide; sulfur dioxide/trioxide

37- The names of acids that do not contain oxygen begin with the word..... and the names of alkalis ends with the word.....

Answer: hydro; hydroxide

38- Oxides are formedwhen non-metals burn in the presence of oxygen.

Answer: as acidic oxides

39-Oxides are formed..... when metals burn in the presence of oxygen.

Answer: as basic oxides

40- Examples of oxyacids are while from examples of acids that do not contain oxygen are.....

Answer: sulfuric acid and nitric acid; hydrochloric acid and hydrosulfuric acid

41- Examples of strong alkalis are..... while from examples of weak alkalis are....

Answer: sodium hydroxide and potassium hydroxide; ammonium hydroxide and magnesium hydroxide

42- A substance that changes color depending on the medium is called.....

Answer: a chemical indicator

43- The litmus's indicator turns..... in an acidic medium.

Answer: red



44- A neutral solution has a pH value of.....

Answer: 7

45- The closer the pH value is to zero, the more.... the solution is.

Answer: acidic

46- The indicator that can distinguish between degrees of acidity and alkalinity is called.....

Answer: universal indicator

47- When metal oxide is dissolved in water,..... is formed. When non-metal oxide is dissolved in water,..... is formed.

Answer: an alkali; an acid

48- The compounds resulting from the reaction of acid with base are called

Answer: salts

49- The salt resulting from the reaction of hydrochloric acid with sodium hydroxide is.....

Answer: sodium chloride

50- The alloy consisting of copper and tin is called.....

Answer: bronze

51- Adding other metals to pure metals improves their properties, and the result is called.....

Answer: an alloy

52- Salts that dissolve in water form solutions that areconductors of electricity.

Answer: good

53- The substance used to neutralize soil acidity is.....

Answer: calcium hydroxide

54- Acid rain is formed when gas dissolves in rain water.

Answer: sulfur dioxide

55- The substance used to treat stomach acidity is.....

Answer: milk of magnesia (magnesium hydroxide)



56- the salinity of Dead Sea due to the high concentration of..... in its water.

Answer: salts

57- The set of points through which a body passes during its motion is known as.....

Answer: path of movement

58- Distance is defined astraveled by a moving body from the starting point to thepoint

Answer: the total length of the path; the end point

59-..... It is defined as the shortest straight line between the starting point and the end point.

Answer: displacement

60- The distance traveled during a unit of time is defined as while the ability to perform work is called

Answer: speed; energy

61-Potential energy is the energy.....of a body as a result of..... exerted on it.

Answer: stored in a body; work

62- Work is the amount of energy required to move a body..... in the same direction as..... acting on it.

Answer: through a displacement; the force

63- Energy is measured in units of..... and work is measured in units of.....

Answer: joules; joules

64-Mass is measured in units of.....and weight is measured in units of

Answer: kilograms; newtons

65- The work done is directly proportional to..... and

Answer: force; displacement



66-Units of measurement for speed are andand.....Displacement is measured in units of.....

Answer: m/s; km/h; metres (m)

67-The outer energy level of metals contains less than..... electrons, while non-metals contain more than.....electrons.

Answer: 4; 4

68- Element (A) has two electrons in its outer energy level (M), so its type isand Element (B) has six electrons in its outer energy level (L) has six electrons its type

Answer: a metal; a non-metal

69- All non-metals are poor conductors of electricity except.....which is a good conductor of electricity.

Answer: graphite

70- Non-metals exists in three states, solid such as.....and gaseous, such as..... and the only liquid is

Answer: sulfur; oxygen; bromine

71- The atoms of solid metals are arranged in a pattern known as

Answer: metallic crystal lattice

72- The metallic bond is occurs as a result of the attraction force betweenpositive metal and the surrounding negative..... cloud.

Answer: the positive metal ions; valence-electron

73- Bronze alloy is used in the manufacture of.....and.....

Answer: statues; medals and jewellery

74- Bronze alloy is characterized by being more than copper and its notfor rusting.

Answer: harder; susceptible/able



75-The scientistexplained that acids are substances that dissolve in water and give..... positive ions, while alkalis give..... negative ion when dissolved in water.

Answer: Arrhenius; hydrogen (H⁺); hydroxide (OH⁻)

76- The molecular formula of acids begins with the positive cation.....and its name is associated with the name..... in its composition.

Answer: hydrogen; the anion

77- The total charge of any compound molecule is equal to

Answer: zero

78- The stomach secretes..... acid which helps in.....

Answer: hydrochloric; digestion of food

79- Lemon and ketchup are consideredsubstances, while toothpaste and baking soda are.....substances.

Answer: acidic; alkaline

80- When hydrochloric acid dissolves in water, it produces ions and..... ions.

Answer: hydrogen ions (H⁺); chloride ions (Cl⁻)

81- When magnesium hydroxide dissolves in water, the following ions are formedand.....

Answer: magnesium ions (Mg²⁺); hydroxide ions (OH⁻)

82- Nitric acid is considered aacid, while nitrous acid and sulphurous acid are.....acids.

Answer: strong; weak

83- Metals burn in an oxygen atmosphere and form.....most of them are known as..... oxides

Answer: metal oxides; basic

84- Non-metals burn in an oxygen atmosphere and form.....most of them are known as..... oxides.

Answer: non-metal oxides; acidic



85- The dissolution of sulphur trioxide in water produces.....

Answer: sulphuric acid

86- Meltingin water produces magnesium hydroxide.....

Answer: magnesium oxide

87- The combustion of fossil fuels produces oxides.....and.....

Answer: sulfur dioxide ; nitrogen dioxide

88-.....chemicals that change colour in an acidic medium compared to a basic medium, such as

Answer: Indicators are; litmus

89- Distilled water has a neutral effect and does not change the colour of the sunflower, as the number of ions in is equal to the number of ions in

Answer: H⁺; OH⁻

90- There is much evidence of acids and alkalis, such as sunflowers and

Answer: red cabbage indicator

91- We reduce soil acidity by adding substances such as

Answer: calcium hydroxide

92- The pH value of acids is7, while in.....it is greater than 7.

Answer: less than; alkalis

93- The pH value of a solution of table salt (sodium chloride) is

Answer: 7

94- The hydrogen number is accurately measured using.....

Answer: a pH meter



95- Acidic gasesand

Answer: carbon dioxide; sulfur dioxide

96-Basic gasesand.....

Answer: ammonia; amine gases

97- Neutral gases on litmus paper are and

Answer: oxygen; nitrogen

98- They are.....compounds that produces from the reaction of acid with.....

Answer: salt ; base

99- salts formed due to the combination betweenof base and..... of acid.

Answer: the cation of the base; the anion of the acid

100- Salt is formed by the union of a metal ion with..... except for the hydroxide group.

Answer: anions

101- When naming a salt, we start with the name with the name of the.....

Answer: Cation

102- Copper sulphate salt isin color, while salt is white in color.

Answer: blue; sodium chloride/ sodium carbonate

103- Sodium Chloride dissolves in water, while is poorly soluble in water.

Answer: silver chloride

104- Sodium nitrate salt consists of an anion and a cation.....

Answer: nitrate (NO_3^-); sodium (Na^+)

105-.....Salt consists of calcium cation and sulphate anion

Answer: calcium sulphate (CaSO_4)



106- The salinity ofis higher than that of Red Sea water by about.....times

Answer: Dead Sea water is; 10

107- Ammonium chloride solution turns litmus paper..... while..... solution blue litmus paper.

Answer: red; sodium carbonate

108- The measuring unit of distance and displacement.....

Answer: metre (m)

109- The measuring unit of speedand

Answer: m/s; km/h

110- $\text{Speed} = \dots \div \dots$

Answer: distance; time

111- The measuring unit of work while the newton is the measuring unit of.....

Answer: joule (J); force

112- $\dots = \dots = \text{force} \times \text{displacement}$

Answer: Work

113- Factors affecting potential energy areand.....

Answer: weight; height

114- The measuring unit of weight

Answer: newton (N)

115- $\text{Potential energy} = \dots \times \dots \times \dots$

Answer: mass $\times$ gravitational intensity (g) $\times$ height (h);

116- $5 \text{ km} = \dots \text{m}$, $3 \text{ kJ} = \dots \text{J}$

Answer: 5000 m; 3000 J

117- Hydrochloric acid (.....) reacts with sodium hydroxide(.....) and form salt(NaCl) and..... (H_2O) or written (HOH).

Answer: HCL, NaOH, sodium chloride, water



Q2: How do you differentiate between?

1- Phosphorus-Iron in term of:

A-Metallic luster

B-Hammering and shaping

C-Conduction of heat and electricity

D-D-Melting point.

Answer: Phosphorus is a non-metal: no metallic luster, brittle (cannot be hammered or shaped), poor conductor of heat and electricity, and has a low melting point. Iron is a metal: shiny metallic luster, malleable and formable, good conductor of heat and electricity, and has a high melting point.

2-Sodium and graphite in terms of: Metallic luster-Which of them is opaque?

Answer: Sodium has metallic luster; graphite is opaque (non-metallic luster).

3-Sulphur and copper in terms of: malleability and ductility - which one is brittle?

Answer: Sulphur is brittle and neither malleable nor ductile; copper is malleable and ductile. The brittle one is sulphur.

4- Silver and phosphorus in terms of: electrical conductivity.

Answer: Silver is a good electrical conductor, while phosphorus is a bad conductor.

5- The bicarbonate group and the sulphate group in terms of: the number of charges they carry - the molecular formula.

Answer: Bicarbonate group: one negative charge, HCO_3^- . Sulphate group: two negative charges, SO_4^{2-} .



6- Sulphuric acid and calcium hydroxide in terms of: the molecular formula

Answer: Sulphuric acid: H_2SO_4 . Calcium hydroxide: $\text{Ca}(\text{OH})_2$.

7- Acidic oxides and basic oxides in terms of: their definition and their reaction with water.

Answer: Acidic oxides are non-metal oxides that dissolve in water to form acids. Basic oxides are metal oxides that dissolve in water to form alkalis.

8- Sulphuric acid and sulphurous acid in terms of: their molecular formula, strength and weakness.

Answer: Sulphuric acid: H_2SO_4 , strong acid. Sulphurous acid: H_2SO_3 , weak acid.

9- Distilled water and hydrochloric acid by two methods.

Answer: Distilled water is neutral (pH 7), does not change red or blue litmus, and is a poor conductor. Hydrochloric acid is acidic (pH less than 7), turns blue litmus red, and conducts electricity.

10- Oxygen gas O_2 and carbon dioxide gas CO_2 .

Answer: Oxygen (O_2) is a neutral gas and does not affect litmus. Carbon dioxide (CO_2) is an acidic gas and turns blue litmus to red.

11- Ammonia gas and nitrogen dioxide gas.

Answer: Ammonia is a basic gas and turns red litmus blue. Nitrogen dioxide is an acidic gas and turns blue litmus red.

12- Magnesium chloride and ammonium nitrate in terms of: Cation - Anion -Molecular formula.

Answer: Magnesium chloride: cation Mg^{2+} , anion Cl^- , formula MgCl_2 . Ammonium nitrate: cation NH_4^+ , anion NO_3^- , formula NH_4NO_3 .



13- Zinc sulphate and nickel chloride in term of: Color - Molecular formula.

Answer: Zinc sulphate is white, ZnSO_4 . Nickel chloride is green, NiCl_2 .

14- Sodium carbonate and calcium carbonate in terms of: Solubility in water -Molecular formula.

Answer: Sodium carbonate is soluble in water, Na_2CO_3 . Calcium carbonate is insoluble (sparingly soluble), CaCO_3 .

15- Ammonium chloride salt solution and sodium carbonate salt solution in terms of: pH value of the solution - Effect on the litmus strips - Molecular formula

Answer: Ammonium chloride solution is acidic, pH less than 7, and turns blue litmus red; formula NH_4Cl . Sodium carbonate solution is basic, pH greater than 7, and turns red litmus blue; formula Na_2CO_3 .

16. Metals and non-metals in terms of their physical and chemical properties.

Answer: Metals: shiny, malleable, ductile, mostly solid, good conductors, high melting points, and form basic oxides. Non-metals: opaque, brittle if solid, poor conductors except graphite, may be solid/gas/liquid, low melting points, and form acidic oxides.

17. Acids and alkalis in terms of their effect on litmus strip.

Answer: Acids turn blue litmus red, while alkalis turn red litmus blue.

18. Strong acids and weak acids.

Answer: Strong acids are good conductor of electricity, e.g. hydrochloric acid or nitric acid. Weak acids are bad conductor of electricity, e.g. sulphurous acid or nitrous acid.



19. Strong alkalis and weak alkalis.

Answer: Strong alkalis are good conductors of electricity e.g. sodium hydroxide. Weak alkalis are bad conductor of electricity e.g. ammonium hydroxide

Q3: What is meant by each of the following?

1-Metals.

Answer: Metals are elements whose outermost energy level usually contains 1, 2, or 3 electrons and that have properties such as metallic luster, malleable, ductile, and good conductors of heat and electricity.

2- Non-metals.

Answer: Non-metals are elements whose outermost energy level usually contains 5, 6, or 7 electrons and that are opaque, brittle, and poor conductors of heat and electricity.

3- Metallic bond

Answer: A metallic bond is the attraction force between positive metal ions and the surrounding negative valence-electron cloud.

4-Alloys.

Answer: Alloys are mixtures formed from the melts of two or more metals.

5- Recycling

Answer: Recycling is the process of converting waste into new usable materials.

6- Atomic group.

Answer: An ion composed of more than one atom of more than one element. And carries a number of positive or negative charges



7- Acids

Answer: Acids are substances that dissolve in water and produce hydrogen ions (H^+).

8- Bases.

Answer: alkalis are substances that dissolve in water and produce OH^- ions.

9- Oxygen acids.

Answer: Oxyacids are acids that contain oxygen in their composition.

10- Strong acids.

Answer: Strong acids are acids that conduct electricity well such as hydrochloric acid HCl

11-Weak acids.

Answer: Weak acids are acids that are bad conductors of electricity such as acetic acid

12-Oxides

Answer: Oxides are compounds formed when elements burn or combine with oxygen.

13- Acid rain.

Answer: Acid rain is rain formed by the dissolution of acidic oxides in atmospheric water vapor.

14- Bronze alloy

Answer: Bronze alloy is an alloy made of 95% copper and 5% tin.

15- Acidic oxides.

Answer: Acidic oxides are non-metal oxides that form acids when dissolved in water.



16- Basic oxides.

Answer: Basic oxides are metal oxides that form alkalis when dissolved in water.

17- pH

Answer: pH is a measure/scale of the degree of acidity or alkalinity of a solution.

18- Salts

Answer: Salts are compounds formed from the reaction between an acid and a base (alkali).

19-Path of movement

Answer: is the set of points through which a body passes during motion.

20-Distance

Answer: Distance is the total length of the path traveled by a moving body from starting point to ending point.

21- Displacement

Answer: Displacement is the shortest straight-line between the starting point and the end point.

22-Speed

Answer: Speed is the distance traveled per unit time.

23- Energy

Answer: Energy is the ability to perform work.

24- Potential energy

Answer: Potential energy is stored energy by a body because of its position or the work done on it.



25- Work

Answer: Work is the amount of energy required to move a body through a displacement in the direction of the force.

26- Chemical indicators

Answer: Chemical indicators are substances whose color differs in acidic medium from alkaline medium

27- Universal indicator

Answer: Universal indicator is an indicator that distinguishes between strong or weak acids and alkalis by color.

28- pH meter

Answer: pH meter is a device that measures the pH value of a solution

29- Independent variable

Answer: Independent variable is the variable deliberately changed in an experiment.

30- Dependent variable

Answer: Dependent variable is the variable measured or observed in response to changing the independent variable.

Q4: What are the benefits, harms, or most important functions of each of the following?

1-Graphite.

Answer: Graphite is used in dry cells because it conducts electricity although it is a non-metal.

2-Bronze alloy.

Answer: Bronze alloy is used to make statues, medals, and jewellery because it is harder than copper and more resistant to rust.



3- The number of electrons in the outer shell of an atom.

Answer: The number of electrons in the outer shell helps determine whether an element is metal or non-metal

4- Recycling of elements.

Answer: Recycling elements save materials, lowers cost, and reduces wastes.

5- Hydrochloric acid in our bodies

Answer: Hydrochloric acid in the stomach helps digest food.

6- Lactic acid.

Answer: Lactic acid helps provide muscles with energy due to lack of oxygen, but its accumulation causes cramps.

7- Litmus strips in the laboratory.

Answer: Litmus strips are used to know if a solution is acidic or alkaline.

8- Magnesium milk.

Answer: Milk of magnesia neutralizes gastric acidity.

9- Acid rain.

Answer: Acid rain damages forests, harms aquatic organisms, corrodes buildings, and affects the respiratory system.

10- Sulfur and nitrogen oxides.

Answer: Sulfur and nitrogen oxides pollute air and contribute to acid rain.

11-Acids in our lives.

Answer: Acids are important in digestion such as hydrochloric acid , providing muscles with energy in the lack of oxygen such as lactic acid



12-Alkalis in our lives.

Answer: Alkalis are important in cleaning products, toothpaste, soap, medicines, and treatment of acidic soil.

13- Acidic oxides.

Answer: Acidic oxides form acids in water and contributes to acid rain that is harmful to living organisms and buildings.

14- Basic oxides.

Answer: Basic oxides form alkalis in water and help neutralize acidic media.

15- Adding tin to copper.

Answer: Adding tin to copper forms bronze, which is harder and more rust-resistant than pure copper so used in making medals, jewelry and statues.

16- Metallic bonding in the manufacture of electrical wires.

Answer: metallic bonding allows the movement of free electrons, so metals conduct electricity well and are used in electrical wires.

17- Adding calcium hydroxide to soil.

Answer: Calcium hydroxide is added to soil to neutralize soil acidity.

18- Recycling aluminum.

Answer: Recycling aluminum saves metals, reduce costs and the need to extract metal from underground.

19- Universal guide.

Answer: Universal indicators distinguish between acids and alkalis according to their strength



20- pH meter.

Answer: pH meter gives a direct and accurate pH reading.

21-Scientist Soren Sorensen.

Answer: Soren Sorensen introduced the pH scale for measuring acidity and alkalinity.

22- Scientist Arrhenius.

Answer: Arrhenius explained that acids produce H^+ ions in water and alkalis produce OH^- ions.

Q5: Give reason of each the following:

1-Graphite is used to make the positive electrode of a dry cell battery (battery stone).

Answer: Because graphite is the only non-metal that conducts electricity well.

2-Aluminum (13Al) is harder and has a higher melting point than sodium (11Na).

Answer: Because aluminum has 3 valence electrons while sodium has 1, so aluminum has a stronger metallic bond, making it harder and giving it a higher melting point.

3- Metals are good conductors of electricity.

Answer: Because metals contain free-moving valence electrons that carry electric current.

4- Graphite conducts electricity, unlike other non-metals.

Answer: Because graphite has free electrons, unlike most non-metals.



5- A litmus strip is not suitable for distinguishing between strong and weak acids.

Answer: Because litmus gives the same color with all acids it only tells if a medium is acidic or basic, not how strong it is.

6- Bronze is more resistant to rust than pure copper.

Answer: Because bronze is alloy that contains copper 95% and tin 5% so it is harder and more resistant to rust than pure copper.

7- Ammonium chloride solution is acidic.

Answer: Because it forms an acidic solution in water with PH less than 7

8- Calcium is added to acidic soil.

Answer: Because calcium hydroxide is basic and neutralizes the acidity of the soil.

9- Solid salts do not conduct electricity.

Answer: Because in the solid state the ions are fixed and cannot move to carry electric current.

10- The color of hydrangea flowers changes depending on the type of soil.

Answer: Because the color of hydrangea flowers depends on the pH of the soil. If it is in acidic soil, the flowers will be blue and if it is in basic soil, the flowers will be red.

11- Chemical indicators only work in the presence of water.

Answer: Because indicators act only in aqueous media to give colors

12- Magnesium hydroxide is used to treat stomach acidity.

Answer: Because magnesium hydroxide is an alkali that neutralizes gastric acidity.



13- Distilled water is neutral.

Answer: Because the number of H^+ ions equals the number of OH^- ions in distilled water ($PH=7$).

14- Fish do not live in the Dead Sea.

Answer: Because the water contains a very high concentration of salts.

15- Some metallic elements are recycled.

Answer: Because their abundance decreases, extraction is difficult, and recycling is cheaper.

16-Occurrence of acid rain occurs.

Answer: Because sulfur and nitrogen oxides dissolve in atmospheric water vapor, forming acid rain.

17- Hydrochloric acid is used in the digestion of food.

Answer: Because hydrochloric acid break down food in the stomach .

18- Muscle tension occurs when there is a lack of oxygen in the muscles.

Answer: Because lack of oxygen causes lactic acid to accumulate in muscles, leading to cramps or tension.

19- Copper is used in the manufacture of electrical wires.

Answer: Because copper is a good conductor of electricity and is ductile, so it can be stretched into wires.

20- Bronze alloy is used in the manufacture of statues, medals, and jewelry.

Answer: Because bronze is hard, and resistant to rust.

21- Most alloys are not expressed in molecular form.

Answer: Because most alloys are mixtures, not compounds, so they do not have molecular formulas.



22- Most countries currently resort to recycling strategies.

Answer: Because recycling saves resources and energy, lowers costs, and reduces pollution and waste.

23- Hydrochloric acid is not an oxyacid.

Answer: Because hydrochloric acid contains no oxygen (HCL).

24- Nitric acid is an oxyacid.

Answer: Because nitric acid contains oxygen (HNO₃).

25- Acid rain has a harmful effect on the environment.

Answer: Because acid rain damages forests, aquatic life, buildings, and human health.

26- Hydrogen chloride is an acid, while sodium hydroxide is an alkali.

Answer: Because hydrogen chloride produces H⁺ ions in water, while sodium hydroxide produces OH⁻ ions in water.

Q6: What happens when:

1- You hammer a piece of coal and another piece of iron.

Answer: When the coal piece is hammered, it crumbles because it is brittle. When the iron piece is hammered, it changes shape because iron is malleable.

2- You dip two litmus strip in a cup containing an acidic solution.

Answer: The blue litmus turns red, while the red litmus remains red.

3- You dip two litmus strip in a cup containing an alkaline solution.

Answer: The red litmus turns blue, while the blue litmus remains blue.

4- You dip two litmus strip in a cup containing distilled water.

Answer: Neither red nor blue litmus changes color.



5- Reaction of acid with alkali.

Answer: salt and water are produced.

6- Accumulation of lactic acid in muscles.

Answer: muscle cramps or tension occur.

7- Combustion of metal with oxygen.

Answer: A metal oxide is formed, which are basic oxides.

8- Combustion of non-metal with oxygen.

Answer: A non-metal oxide is formed, which are acidic oxides.

9- Melting of sulfur and nitrogen oxides in water vapor in the atmosphere.

Answer: Acid rain forms in the atmosphere.

10-Acid rain falling in a certain area.

Answer: Forests may be damaged, aquatic organisms are harmed, buildings corrode, and respiratory problems increase.

11- Increasing body weight relative to its potential energy.

Answer: The potential energy increases.

12- Decreasing distance traveled during the same time.

Answer: The speed decreases.

13- Strong impact on an object with zero displacement.

Answer: No work is done because displacement is zero.

Q7: Give one example of each of the following:

1-Metals.

Answer: Iron.

2-Non-metals.

Answer: Sulfur.



3-Alloys.

Answer: Bronze.

4-Acids.

Answer: Hydrochloric acid (HCl).

5-Bases.

Answer: Sodium hydroxide (NaOH).

6-Oxides.

Answer: Magnesium oxide (MgO).

7- Salts.

Answer: Sodium chloride (NaCl).

8- Positive atomic group.

Answer: Ammonium group (NH_4^+).

9- Monovalent atomic group.

Answer: Nitrate group (NO_3^-).

10-divalent atomic group

Answer: Sulphate group (SO_4^{2-}).

11- Trivalent atomic group.

Answer: Phosphate group (PO_4^{3-}).

12-Oxyacid.

Answer: Nitric acid (HNO_3).

13- Non-oxygenic acid.

Answer: Hydrochloric acid (HCl).

14- Acid in your body.

Answer: Hydrochloric acid in the stomach.



15- Alkaline.

Answer: Baking soda.

16- Metallic oxide.

Answer: Magnesium oxide (MgO).

17-Non-metallic oxide.

Answer: Carbon dioxide (CO₂).

18- Alkaline substance used as medicine.

Answer: Milk of magnesia / magnesium hydroxide [Mg(OH)₂].

19- Body that performs work.

Answer: A person lifting a box upward.

20- Body that does not perform work.

Answer: A person pushing a wall that does not move.

Q8: Write the chemical formula for each of the following:

1- Sodium chloride.

Answer: NaCl

2- Calcium hydroxide.

Answer: Ca(OH)₂

3-Aluminum sulfate.

Answer: Al₂(SO₄)₃

4- Potassium nitrate.

Answer: KNO₃

5- Sodium carbonate.

Answer: Na₂CO₃

6- Magnesium oxide.

Answer: MgO



7- Calcium phosphate.

Answer: $\text{Ca}_3(\text{PO}_4)_2$

8- Iron (III) chloride

Answer: FeCl_3

9- Hydrogen sulfide.

Answer: H_2S

10-Ammonium hydroxide.

Answer: NH_4OH

11-Sulfuric acid

Answer: H_2SO_4

12-Nitric acid.

Answer: HNO_3

13- Hydrochloric acid.

Answer: HCl

14- Sulfur dioxide.

Answer: SO_2

15- Nitrogen monoxide.

Answer: NO

16-Silver nitrate

Answer: AgNO_3

17- Sodium sulfide.

Answer: Na_2S

18- Aluminum oxide.

Answer: Al_2O_3



19-Potassium hydroxide

Answer: KOH

20- An atomic group consisting of three elements

Answer: HCO₃⁻

21- Nitrous acid

Answer: HNO₂

Q9: Write the name represented by the following chemical formulas:

1-NaCl

Answer: Sodium chloride.

2- Ca(OH)₂

Answer: Calcium hydroxide.

3-Al₂(SO₄)₃

Answer: Aluminum sulphate.

4-KNO₃

Answer: Potassium nitrate.

5-Na₂CO₃

Answer: Sodium carbonate.

6-MgO

Answer: Magnesium oxide.

7- Ca₃(PO₄)₂

Answer: Calcium phosphate.

8-H₂S

Answer: Hydrosulfuric acid (hydrogen sulfide).

9- NH₄OH

Answer: Ammonium hydroxide.



10- H_2SO_4

Answer: Sulfuric acid.

11- HNO_3

Answer: Nitric acid.

12- HCl

Answer: Hydrochloric acid.

13- SO_2

Answer: Sulfur dioxide.

14- NO

Answer: Nitrogen monoxide.

15- AgNO_3

Answer: Silver nitrate.

16- CuSO_4

Answer: Copper sulphate.

17- Na_2S

Answer: Sodium sulphide.

18- NaHCO_3

Answer: Sodium bicarbonate.

19- Al_2O_3

Answer: Aluminum oxide.

20- MgSO_4

Answer: Magnesium sulphate.

21- H_2CO_3

Answer: H_2CO_3 : Carbonic acid



22- H_3PO_4 :

Answer: H_3PO_4 : Phosphoric acid

Q10: Miscellaneous questions:

1-What is the rule used to name acids that do not contain oxygen?

Answer: They are named by starting with "hydro", then the name of the non-metal anion, then add ic instead of ide and the word acid.

2-What is the rule used to name oxyacids whose anion names end with the suffix "-ate"?

Answer: start with the name of anion and add at the end ic instead of ate then word acid .

3-What rule is used to name oxyacids whose anion names end with the suffix "-ite"?

Answer: start with the name of anion and add at the end ous instead of ite then word acid".

4-What factors determine potential energy?

Answer: Potential energy depends on the body's weight and its height above ground.

5-What is the relationship between work and both force and displacement?

Answer: Work is directly proportional to both force and displacement
 $w = \text{force} \times \text{displacement}$.

6-What mathematical relationship is used to calculate velocity?

Answer: $\text{Speed} = \text{distance} / \text{time}$.

7-What mathematical relationship is used to calculate work?

Answer: $\text{Work} = \text{force} \times \text{displacement}$.



8-What mathematical relationship is used to calculate potential energy given weight?

Answer: Potential energy = weight $\times$ height.

9- What mathematical relationship is used to calculate potential energy given mass?

Answer: Potential energy = mass $\times$ gravitational intensity $\times$ height.

10- What are the conditions for doing work?

Answer: Work is done when a force acts on a body and causes displacement in the direction of that force.

Q11: problems:

1-A train travels a distance of 200 km in 4 hours. What is the speed of the train?

Answer: Speed = distance / time = $200 / 4 = 50$ km/h.

2- An object its weight 20 N is at a height of 5 m above the ground. Calculate its potential energy.

Answer: Potential energy = weight $\times$ height = $20 \times 5 = 100$ J.

3-A stone with a mass of 8 kg is placed at a height of 6 m. Calculate its potential energy. ($g=10\text{m/s}^2$)

Answer: Weight = $m \times g = 8 \times 10 = 80$ N, so potential energy = $80 \times 6 = 480$ J.

4-An apple with a mass of 200 g falls from a tree branch at a height of 5 m. Calculate the potential energy of the apple.

Answer: Mass = 200 g = 0.2 kg, weight = $0.2 \times 10 = 2$ N, so potential energy = $2 \times 5 = 10$ J.



5-An object moves at a speed of 20 km/h. Calculate the distance traveled after 3h.

Answer: Distance = speed $\times$ time = $20 \times 3 = 60$ km.

6-An object exerted a work of (50J) to move a wheel a distance of (10 m). Calculate the amount of force required to exert the work.

Answer: Force = work / displacement = $50 / 10 = 5$ N.

7- An object has a potential energy (240J) at a height of (12 m). Calculate the weight of the object.

Answer: Weight = potential energy / height = $240 / 12 = 20$ N.



كيفية طباعة صفحات معينة من ملف معين مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9

